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WHO MAKES THE BEST GAS-METERS.

In our number for March 2d, we said that we were often asked this question. In our last issue we referred to a prominent and successful manufacturer of meters in this city.

We think it proper to give equal credit to another of our old friends, in Philadelphia, Messrs. Harris & Brother, who have been long and favorably known as manufacturers of gas-meters, and all kinds of apparatus in that business.

Nor do we forget to mention our other friends in that city, Messrs. R. H. Gratz & Co., Code, Hopper & Co., and Jos. Lennig, to whose advertisement in our columns we refer our readers.

We understand that Messrs. Harris & Bro. have very lately dissolved their business connection. Mr. Andrew Harris being authorized to close the affairs of the late firm, he may be found at his new factory, N. W. corner Thirteenth and Cherry streets, Philadelphia, where he continues the gas-meter business. Mr. Harris' advertisement will appear in our next number.

ACETYLIDE OF COPPER IN COPPER GAS PIPES.

Mr. Crova makes the following remarks on acetylide of copper in copper gas pipes:

It is well known, that copper tubes, long used to conduct lighting-gas, have sometimes, during the cleansing of the interior, occasioned very dangerous and sudden explosions, occasionally proving fatal to the workmen. In one of the scientific reviews, an accident of this kind is recorded as happening at Philadelphia. Acetylide of copper having the property of detonating by an elevation of the temperature or by a blow, and the presence of acetylene in lighting-gas having been recently proved by M. Berthelot, I have tried to ascertain whether acetylene, in presence of air, could combine with copper, and so form acetylide of copper. By passing a mixture of air and moist acetylene through a glass tube containing bright copper turnings, this metal tarnishes rapidly, assumes iridescent colors, and finally becomes black, but as this alteration takes place only on the surface of the metal, it is very limited. By using copper reduced by hydrogen, I extended the surface of the metal. A small quantity of metal was placed in two flasks containing a mixture of equal volumes of air and acetylene, and also in one of the flasks a drop of ammonia. The two flasks, well stoppered, their necks plunged in water, were left to themselves for two days. They were then carefully opened, and the water entering them absorbed nearly half the gaseous volume. The absorption seemed to be somewhat greater in the flask containing a little ammonical vapor. The copper turned black. After washing and drying, I found that it contained a notable quantity of acetylide of copper; for, heated with hydrychloric acid it disengaged acetyline, and thrown on a heated metallic plate, a louder explosion resulted than with pure acetylide, and without deposit of carbon. This difference will be readily understood, for the acetylide formed during my experiments, finding itself in presence of excess of oxide of copper, the carbon and hydrogen of the acetylide were entirely destroyed. It is evident that copper, in the presence of air and acetylene, is spontaneously transformed into acetylide of copper containing excess of oxide. As lighting-gas contains acetyline, a little air, and perhaps even some ammonical vapors, it is obvious that acetylide of copper may be formed in tubes which have served to conduct lighting-gas.

GRAND GAS-LIGHT COMBINATION ON LONG ISLAND, N. Y.

Full particulars of the Long Island Gas-Light Companies will be found in this number.

THE BROOKLYN, N. Y., GASLIGHT COMPANY BEFORE THE LEGISLATURE.

The Senate Committee on Cities have before them at this time the bill which passed the Assembly a fortnight since restricting Gas Companies in Brooklyn from charging different prices. The bill, though on its face of local application, only seems to have excited wide-spread alarm among the Gas Companies throughout the State, and companies in Brooklyn, New York, Albany, Rochester and elsewhere, appeared by eminent counsel to oppose the passage of the bill by the Senate. Mr. William Coit, of Brooklyn, opened the discussion in behalf of the Assembly bill. He gave the history of the competing companies in Brooklyn, stating that the old company while it had a monopoly of the business, was harsh and oppressive in its dealings, making numerous unreasonable exactions of its customers, and giving rise to so much dissatisfaction that the people were driven to the organization of the new company; that since the latter had gone into operation, the old company, not satified with correcting the evils complained of, had embarked in a systematic attempt to ruin its rival by putting the price of gas in the streets where the mains of the new company are laid, at a nominally low figure, retaining the old standard of charges in other places. He contended that this was done for the avowed purpose of clearing the field of competitors, and reinstating the old monopoly, and that the Legislature should interpose to arrest a course so opposed to the public interest. Col. Charles Roome, President of the Manhattan Company, followed in opposition. He gave an interesting history of the progress of gas manufacture, and of the struggles which the pioneer companies had to pass through before attaining their present prosperity, and contended that the opposition in the Brooklyn case was unfair, and ought not to be encouraged by the Legislature. Mr. Fiske, of the Williamsburgh Company, Mr. J. N. Gilbert, and Mr. Lucien Birdseye, of Brooklyn, also addressed the Committee, and the matter, after a most interesting session, was adjourned over.

QUALITY OF LONDON GAS.

Dr. Letheby presented his report to the Commissioners of Sewers in the city of London, February 17th, on the illuminating power and chemical quality of the gas supplied by the Chartered, the Commercial, and the Great Central Gas Companies for the quarter which had just expired, and also for the year.

In the course of the quarter, the gas supplied by the three companies had been tested on 477 occasions. The examinations were made in two places, viz., at the London Hospital, and at Finsbury Square; the general results are as follows: The illuminating power of the Great Central Gas has been equal to 13.01 standard sperm candles; that of the Chartered to 13.15 candles; and that of the Commercial to 12.89 candles. Each of these is above the quality (12 candles) required by act of Parliament, and Dr. Letheby reports that only on two occasions has the illuminating power been less than the parliamentary standard. These were the Commercial, 11.94, in the week ending Nov. 22, and the Great Central in the first week in January. The quality of the Great Central Gas has been equal to the average (13.11) for the corresponding quarter of the last seven years.

In the course of the whole year there have been 890 examinations of the gas supplied by the three companies. The results are shown in the following table:

ILLUMINATING POWER OF THE GAS IN SPERM CANDLES OF 120 GRAINS CONSUMPTION.

Quarters Ending.	Great Central.	Chartered.	Commercial.
May	12.59	12.85	13.69
August	12.61	12.85	14.02
November	13.34	13.78	13.02
February	13.01	13.15	12.89
Year's average	12.89	13.16	13.41

Average of 7 years, 12.65.

In concluding his report, Dr. Letheby says:

"These results indicate two things, namely, first, that the average illuminating power of each company's gas has been above the requirements of the act of Parliament; and, secondly, that the quality of the Great Central Company's gas has improved to the extent of a quarter of a candle since the act of Parliament of 1860 has come into operation.

"The chemical quality of the gas has been generally good, as regards the absence of ammonia and sulphuretted hydrogen, but there has been a great variation in the proportion of sulphur present. In several instances the quality has risen very far above the Act of Parliament quantity of 20 grains of sulphur in the 100 cubic feet. Hereafter, however, this will be a subject of constant observation."

PETROLEUM VS. COAL GAS.—The interesting report of the annual meeting of the New City Gas Company of Montreal, C. E., which will be found in another column, is well worth a careful perusal. The paragraph relative to the comparative cost of making gas from petroleum and coal, although it gives no figures, yet it states that the conclusion of the gentlemen appointed to investigate the question was decidedly in favor of coal. This decision was made, after a personal visit had been paid to the Canada oil region, and every inquiry necessary for the purpose was instituted. These views accord with those of our correspondent—"An Advocate of Coal Gas"—whose letters have recently appeared in the JOURNAL. We may state by the way, that our own views have been in consonance with those expressed by the gentlemen named in the report. However petroleum tar may answer the purposes of *small* gas-works in certain situations, neither it nor crude petroleum can ever be profitably used for large city works.

SURREY CONSUMERS' COMPANY OF LONDON.—Dr. J. Northcote Vinen reports as follows on the quality of the gas supplied to the Surrey Consumers' Gas Company:

1863. Week ending	Number of Observations.	Maximum Light Candles.	Minimum Light Candles.	Average Light Candles.
Feb. 7	4	13.56	12.85	13.12
" 14	4	13.70	13.37	13.52

The volume of hydrocarbons averaged 3.75 per cent.; carbonic acid, 0.75 per cent.; there was no indication either of sulphuretted hydrogen or of ammonia. The maximum pressure was 24-tenths, the minimum 5-tenths.

It will be seen that the chemical quality of the Surrey Consumers' Company's Gas is much better than that of the Companies reported on by Dr. Letheby. The illuminating power, however, is low—not much better than the combined average of the Great Central, Chartered and Commercial Companies.

WATER-WORKS OF AMERICA.

NEW YORK CITY.

The Annual Report of the Croton Aqueduct Board was presented to the Councils of New York City, January 5th. We give an abstract of its more important features.

Little beyond the usual routine of work has been undertaken during the past year under the head Aqueduct Repairs and Improvements. The keepers have exercised their accustomed vigilance and industry, and the general good condition of the line of the Aqueduct attests their efficiency.

The regular examination and repair of the interior of the conduit took place in June last. The water was shut off at the Dam on the 4th day of June, at 8 A. M., and let into the Aqueduct again on the 8th of the same month at 1 A. M., having been stopped eighty-nine hours. During this time, it was possible to make full repairs only in places where but a limited quantity of work was required. There are points, however, on the line of the Aqueduct which require more thorough renewal and more time in their repair than could be given within the short time during which it has of late years been able to keep the water shut off from the city. These points have, therefore, of necessity, been strengthened but temporarily from year to year. The completion of the New Reservoir enables a large store of water to be laid up in the city, and thus give full time for all the work required. This work of thorough repair will be undertaken early in the coming season, when the time devoted to this purpose will be more extended than it has been possible to allow for many years.

The retaining walls of the embankments in many cases require extensive rebuilding. Most of these walls have been constructed of the stone found in their immediate neighborhood—often of a very inferior and perishable character. Thus far, these walls have been kept in comparatively good order, by removing, every year, portions of disintegrated stone and replacing them with durable material; but during the past year such large portions and at so many points are giving way in mass, that an increased amount must necessarily be expended on them during the coming season. At Sawmill river, operations have already been commenced, the condition of the retaining walls making further delay imprudent. This necessity, together with the contemplated thorough repair of the interior, has obliged the Board to increase the amount usually asked for the prospective yearly expenditure under this head.

The Board had hoped that in this report they would have been able to state that the difficulties, dangers, and expense to which they have been so long subject, by reason of the condition of the mains in the Fifth avenue, were permanently passed. But it is otherwise. In the last Annual Report they set forth fully the exact condition of these mains, showed the constant and imminent danger of rupture, the necessity of immediate attention to them, gave an estimate of the amount required to put them in proper and safe condition, and asked for an appropriation to enable them to do the work. For some reason, this appropriation was omitted from the Tax levy for the past year.

On the 27th day of June, the accident, so confidently expected, occurred. The Board immediately sent a communication to the Common Council, again setting forth, in strong terms, the urgent necessity for action, and asking an appropriation sufficient to meet the expense. The resolution was passed in the Board of Alderman, but failed in the Board of Councilmen. After a long delay, the resolution was, on the 4th day of November, passed, but with such amendments as to render it entirely nugatory. This Board was ordered to do the work required, but the appropriation of money necessary to meet its expense was stricken out. The resolution, thus amended and passed in the Board of Councilmen, was sent back to the Board of Aldermen, and concurred in by them. Such a resolution was, of course, useless, as the City Charter expressly forbids the commencement of any such work until an appropriation to meet its expenses be made by the Common Council. Since the communication last referred to, there have been three ruptures in the same mains, in the same locality, arising from the same cause, each being attended by expense and damage, and great inconvenience to citizens generally. These disasters occcurred respectively on the 9th day of August, 27th of September, and 17th of November.

The Board have deemed it important to report upon this point somewhat in detail, in order to put on record facts which will show that the expenses already incurred, and those which will most probably yet ensue before these mains can be placed out of danger, are not in any measure attributable to the neglect of the Department.

Fortunately, there are as yet no buildings of importance on this part of the avenue. Had it been otherwise, the damage would have been immense. The great depth of these pipes below the surface, at the same time that it makes their repairs more expensive, increases the liability of damage to any houses which may be near the point of rupture. They lie below the ordinary depth of foundations for buildings—being at some points twenty-four feet below the present surface of the avenue. The immense volume of water which, under pressure, is discharged when one of these large mains is broken, before it is possible to have the gates closed at the different reservoirs, would destroy any house in its immediate vicinity.

It is hoped that, during the coming season, the expense to the city, the inconvenience to the traveling community, and the damage constantly attendant upon the present condition of these mains, will be guarded against, and the Board relieved from the anxiety to which they are now constantly subject.

CROTON AQUEDUCT EXTENSION.

The operations of the Board under this head, during the past year, have embraced the improvement of the High Bridge, the additional main across Manhattan Valley, the Junction Gate-house and Aqueduct, and the new Grand Reservoir.

THE HIGH BRIDGE IMPROVEMENT.

In the last Annual Report of the Board, the completion of the new pipe on the bridge was announced, and the perfect success of its operation. At that time the additional masonry necessary for the covering to this pipe had not been commenced. The granite already cut was nearly all delivered at the base of the bridge, and a large portion of the materials for the iron and brick-work in the covering arch were also on the ground.

During the past season, the side-walls have been carried up and the covering arch completed. Upon this the first course of brick in asphaltum has been laid, but the upper course of paving was not completed at the time when the Board were obliged to suspend operations for the winter. The only work now remaining to be done, to complete this important improvement, is to lay the course of paving on the arch now constructed, and to surmount the coping of the entire structure with a substantial iron railing. This will all be done during the coming season. The paving, while forming a covering and protection to the arch over the pipe, will also form a perfectly uniform foot-walk for visitors to the bridge; the rise in the arch being too slight to cause any inconvenience. The masonry and all the work on this bridge have been done in the most thorough and perfect manner, and will compare favorably with any of the other work under this head. The additional masonry put upon this bridge, although probably not so effective as if it had been necessary to carry it up higher, is yet thought to materially improve the architectural appearance of this structure.

The large pipe continues to work well in all respects. Some grading and flagging will be required next year, when the main work is done, to put the grounds and buildings in complete order.

MANHATTAN VALLEY.

The large main (five feet diameter), which was in progress at the time of the last report, was completed and put in operation early in the season. There are now laid, as inverted syphons, across this valley, the two pipes, three feet in diameter, put down at the time of the construction of the Aqueduct, the pipe, four feet in a diameter, laid down in 1853, and the pipe, five feet in diameter, recently completed. These will convey across the valley all the water which can be brought down to the city by the present aqueduct.

The line of pipe just completed is of cast iron, in lengths of twelve feet five inches, and in thickness one and three-eighths inches. The average weight of the length is 11,226 pounds, and the aggregate extent of this line, measured as laid, is 4,116 lineal feet. The pipe was furnished under a contract made with Colwell & Co., of Philadelphia, and the Board take pleasure in testifying to its great excellence. More perfect specimens of pipe-manufacture are rarely, if ever, to be met; certainly no such work has ever before been furnished to this Department.* The work of laying this line was performed under contract, by Mr. J. P. Cumming, and throughout is well and substantially done.

THE NEW RESERVOIR.

With the exception of dressing the slopes on a small portion of the outer banks, all the work originally contemplated in the New Reservoir and Junction Aqueduct, with the three Gate-houses, is now completed.

The whole was in proper working order and ready for operation, early in the summer, but the water was not formally introduced into the Reservoir until the 19th of August, 1862.

The inauguration of this great work was attended with few ceremonies, but with complete success.† Since the water was let in the Banks and Gate-houses have been tested, and are still undergoing various tests with the most satisfactory results. The gates, stop-cocks, and screens, have all been found to work perfectly.

Beside the work embraced in the original design and estimate of this Reservoir and its appurtenances, the Board is now engaged in covering the gate-houses with handsome superstructures. These buildings will be of granite, and of a design ornamental, yet suitable to the character of the main work. The building over the Junction Gate-house is already completed. That over the south Gate-house is partially erected. The granite and other materials for the north Gate-house being nearly all ready, both will be completed early in the coming season. There has also been put around the Reservoir a massive granite coping, not originally contemplated. On this will be placed, in the next year, a suitable iron railing. The top of the bank will also be properly prepared for a foot-way. These improvements will add to the cost of the work as originally estimated, but not to a greater extent than seems to be demanded by the character of the work, and of that immediately surrounding it in the Central Park.

The construction of the heavy embankments for the Park roads, over the effluent pipes from each Gate-house, has put the Department to great additional expense. Shortly after the water was let into the pipes, a leak was discovered. The height of embankments over the pipes at this point was twenty-seven feet, and, on excavating, it was found that its great weight had caused a slight settlement in the bed of the pipes. This bed had been carefully examined before laying the pipes, and was found capable of sustaining, without compression, the weight of the embankment as originally intended. The embankment was carried up by the Park Commissioners, in the construction of their road, to a greater height than was contemplated by this Board. This additional weight caused sufficient settlement in the whole bed to effect a leak, and subsequently a fracture in the pipes. In view of the fact that, whatever might be the care bestowed in putting them down, these leaks might again occur, and in view of the great expense and inconvenience which would attend their repair after this immense embankment was replaced, and the Park road permanently built, it was deemed advisable not to permit the pipes to be covered with so heavy a mass.

Two methods of avoiding future inconvenience were suggested. The first and most economical was, to cover the pipes with only so much earth as the original plan of the Reservoir had provided for before the Park roads over them were laid out, and to provide for the continuance of the roads across the breaks, thus made in their line, by handsome iron bridges.

* Shortly after this contract was made, the firm of Colwell & Co. was dissolved, and the business passed into the hands of their successors, S. Fulton & Co., by whom the greater part of the pipes were furnished. This statement is due to the gentlemen comprising the present firm.

† [Some account of these ceremonies will be found on page 75 of the present volume of the AMERICAN GAS LIGHT JOURNAL.—ED.]

The other plan was, to throw arches over the pipes and place embankments for the roads on the arches. This would be in reality extending the pipe-vaults out to a point at which the covering of the pipes was only the usual depth. As the Board could always have access to the pipes in these vaults, no disturbance of the surface-earth from any future accident would be likely to occur.

It being necessary to secure the assent of the Park Commissioners to the first method (involving as it did a change in the plan of their roads), the two plans were submitted to them, and the saving to be effected by the adoption of the first was fully stated. They declined to permit any change in their roads, and consequently the Board were obliged to adopt the expensive plan of the arches or vaults. They have accordingly been built.

The vaults thus constructed at the north Gate-house consist of two arches, each covering two lines of pipe. They are from sixteen to twelve feet span and each two hundred and seventy-eight feet in length. The vaults are floored with concrete, and the abutments rest upon the under-lying ledge of rock. The south pipe-vaults cover six lines of pipe. The western line (one main) is covered with an arch of nine feet span and one hundred and forty-eight feet six inches in length; extending to transverse road No. 3. The abutments of this arch also rest upon the solid rock. The five eastern lines are covered by two arches, one varying in span from twenty-eight to nineteen feet, being thirty-nine feet in length; the other varying from nineteen to twelve feet span, and being sixty-four feet in length. One covering two, the other three mains. These unite with one arch of thirty-two feet six inches span, and one hundred and seventy feet in length; covering the five mains. From the termination of this arch to the transverse road No. 3, an arch of seven feet span and twenty-eight feet in length is built as an entrance to the main vaults. These vaults are entered from the transverse road; their entrances being closed with iron doors. The foundations of the three last mentioned are of oak piling and concrete. The floors are also of concrete, and they are drained by a twelve-inch cement-pipe, leading into the main sewer of the Reservoir at Eightieth street and Fifth avenue.

The main effluent pipes from the two Gate-houses to the Fifth and Eighth avenues, which were in progress at the time of the last report, have all been laid. Of the six issuing from the south gate, one passes through the Park to transverse road No. 2, and through said road to the Eighth avenue, where it is connected with the thirty-inch main which comes from the western gates of the old Receiving Reservoir. The five other mains issuing from the south Gate-house are laid through the Park as far down as Eightieth street and Fifth avenue, at which point they leave the Park, and four of them are connected with the four effluent pipes from the eastern gates of the old Reservoir. The remaining pipe is capped at Fifth avenue, with a view of continuing it down to the lower part of the city at some future time.

From the north Gate-house there are four effluent pipes or mains. Of these, two are laid through the Park out to the Eighth avenue, and the others to the Fifth avenue, at which point they are capped. They will be extended northward, as the increasing wants of the city may demand.

Under this head, the Board calls the attention of Councils to the necessity for some action in reference to the construction of a Storage Reservoir in Westchester County, and also to the expediency of supplying Carmansville with water.

The necessity for Storage Reservoirs was shown in the last Annual Report, and a request was made that Councils snould pass a resolution authorizing the necessary appropriations for a commencement of the work. No steps having been taken in the matter, it is again suggested for consideration. With an aggregate annual precipitation of rain and snow of forty-two inches vertical height (which is about the average for many years past), the quantity falling upon the Croton Basin, tributary to the works, is equal to an average of 677,674,257 gallons* per day.

Judging from experiments made in other localities, the physical and geological features of which, while resembling the Croton Basin to some degree, are less favorable as a whole; the loss from evaporation, vegetation and such absorption as does not subsequently reappear in springs, may be put down as equal to fourteen inches vertical height of the total annual rain fall. Make a further deduction equivalent to one-sixth of the entire annual rain-fall, to cover loss by evaporation and filtration from Storage Reservoirs, and it is computed that a quantity equal to an average of 338,832,128 gallons per day would find its way to Croton Dam, and the inlet of the Aqueduct.

Where it necessary to use the entire yield of the Croton Basin, a great portion, if not the whole, of this quantity could, by a proper system of Storage Reservoirs, be saved, and made available. This quantity is nearly nine times that which is now daily brought to the city.

Notwithstanding this immense wealth of water, there are periods in the summer months when the yield from the Croton River is but 38,400,000 gallons per day. To add to this quantity a daily supply sufficient to fill the aqueduct to its utmost capacity, it is only necessary to store up a small portion from the profusion which is shown to be wasted. The board's examination of the Croton basin has developed many sites for storage reservoirs, of sufficient capacity to meet all wants; while the increasing consumption of the city shows that some such provision against the limited supply of the dry seasons will soon be required. Earnest consideration of this important subject is urged upon the councils.

The supply of Carmansville with water is deemed by the board to be called for by the present condition of that portion of our city. The estimated cost is $200,000, and the greater portion of the work could be finished in one year. The Board will insert this amount in estimates to be made under this head for the coming year.

As an important matter connected with the works under the control of this department, both as to the water supply and sewerage, observations have for some years past been made of the rain fall and temperature during the year.

The points of observation have been at Croton dam, the 3d and 6th divisions of the aqueduct line, and the receiving reservoir.

The rain guage used is that adopted by the Smithsonian Institution. The following table shows the results for last year:

TABLE *showing the Precipitation of Rain and Melted Snow during the year* 1862, *and the *range of the Thermometer during the same period.*

MONTHS.	Amount of Rain or Melted Snow in vertical inches.	Thermometer in the Open Air. Highest range, Fahrenheit.	Lowest range, Fahrenheit.	Monthly average.
January	4.36⅛	50	0	27⅝
February	2.83	47	5	28
March	3.68	52	15	34⅜
April	2.23	85	27	46⅝
May	2.83	89	44	57⅝
June	4.86½	91	50	67
July	5.42⅝	95	55	72½
August	2.26⅝	97	50	72½
September	2.46⅛	87	40	65⅛
October	4.29⅝	84	26	55⅝
November	4.66⅛	71	19	41⅝
December	1.72½	73	8	33

Total rain fall for the year.....41.64 inches.
Mean Temperature.....49.94 degrees.

During the coming year there will be added observations to ascertain the amount of annual evaporation.

WATER RENTS AND PENALTIES.

The receipts under these heads have been for the year as follows:

From water rents	$772,332 47
From penalties	10,902 13
Total	$783,234 60

The following table exhibits the annual revenue derived from Croton water since its introduction into the city. Upon reference to this table it will be seen that the receipts from this source during the past year are greater than those of any previous year; the increase over the receipts of 1861 being $17,280.25, and over the receipts of 1860 (the year of greatest previous revenue), $16,064.98. The board feel much gratification in preserting results so satisfactory to all who feel an interest in the growth and welfare of our city—showing, as it does, continued good management in the affairs of the bureau of the water registrar, as well as an willingness on the part of the citizens generally to meet the annual expenses connected with the introduction and supply of Croton water.

The following table exhibits the Yearly Revenue derived from Croton water, as collected by the Department, from its introduction into the city in 1842, *with the annual increase or decrease thereof:*

TIME.	RECEIPTS.	INCREASE.	DECREASE
Oct. 5, '42 to May 1, '43..	32,053 74	.....	——
May 1, '43 " 1, '44..	84,444 68	52,390 94	——
" 1, '44 " 1, '45..	117,277 86	32,833 18	——
" 1, '45 " 1, '46..	163,900 52	46,622 66	——
" 1, '46 " 1, '47.	193,346 24	29,445 72	——
" 1, '47 " 1, '48..	219,416 72	26,070 48	——
" 1, '48 " 1, '49	250,081 51	30,664 79	——
" 1, '49 to Dec. 31, '49..	259,532 97	*9,451 46	——
Jan. 1, '50 " 31, '50..	458,951 87	†199,418 90	——
" 1, '51 " 31. '51.	458,789 78	.....	161 09‡
" 1, '52 " 31, '52..	533,965 16	75,175 38	——
" 1, '53 " 31, '53..	579,956 30	45,991 14	——
" 1, '54 " 31, '54..	608,966 15	29,009 85	——
" 1, '55 " 31, '55..	674,736 42	65,770 27	——
" 1, '56 " 31, '56..	662,949 57	.....	11,786 85
" 1, '57 " 31, '57..	697,370 51	34,420 94	——
" 1, '58 " 31, '58..	730,107 98	32,737 47	——
" 1, '59 " 31, '59..	759,250 45	29,142 47	——
" 1, '60 " 31, '60..	767,169 62	7,919 17	——
" 1, '61 " 31, '61..	765,954 35	.....	1,215 27
" 1, '62 " 31, '62..	783,234 60	17,280 25	——
Total.....	$9,801,457 00		

SEWERAGE.

During the past year, the extension of the area of sewerage has been less than usual; the length of sewers for which contracts were made being but about three-fifths of the length contracted for in 1861, and about one-half of that put under contract in 1860.

WATER PIPES AND LAYING.

Under this head is included the work and expenditure connected with the purchase and laying and repairing of all distribution pipes, stop-cocks, hydrants, and their appurtenances.

The amount available for the operations of the board during the year was	96,364 68
Of which was expended	92,586 03
Leaving a balance of	$3,778 65

SEWERS—REBUILDING, REPAIRING, AND CLEANING.

Under this head, was available the sum of.	51,534 10
Of which was expended	27,384 04
Leaving a balance of	24,150 06
From wich must be deducted the sum required in payment for the rebuilding of the sewer in Eighth avenue from Thirty-fifth to Thirty-ninth street, with its new outlet in Thirty-ninth street, Ninth avenue, and Fortieth street, viz	21,212 31
Leaving a net balance of	$2,937 75

SEWERS—[NEW WORK].

19,653 lineal feet of sewers and eighty-nine receiving-basins, including 1,722 lineal feet of sewers and fourteen receiving-basins built at private expense, have been constructed during the year.

The expense of these improvements is assessed upon the property benefited.

The board, in this connection, renew their former recommendations for the adoption of a general system of sewerage for those districts where sewers have not yet been constructed. A resolution, authorizing this important work to be undertaken, and providing an appropriation therefor, was introduced into the Board of Councilmen, but failed in its passage. By the law of 1849, organizing the Croton aqueduct department, the board is charged with the construction of sewers, subject, however, "to the orders of the Common Council, as to the times and places of building new sewers, and to the general plan which has been, or may be, adopted for the sewerage and drainage of said city."

The absolute necessity of a general plan of sewerage has been frequently urged upon the Councils, but as yet

* United States gallons.

* Observations were made daily, at 7 A. M., 2 P. M., and 9 P. M.

* Eight months.

† Under the operation of the laws of 1849.

‡ A reduction in the rents, equal to about 10 per cent., was made this year.

no authority has been given to the board to take any steps in the matter. So much has been said on this subject in former reports and special communications, that the board simply add that the time has come for some definite action on the part of the Common Council, if they would save the city from incalculable expense and the operation of the sewers from confusion and inefficiency.

The topographical features of the lower part of the city have served in some degree to obviate the bad results which otherwise would inevitably have followed the want of system in this regard.

The upper part of the city has not the same topographical advantages to offset imperfect arrangements, and no time is to be lost in guarding against future difficulties and useless expenditure, by the adoption of a system of sewers based upon correct principles after proper investigation. In this respect, the city of New York, instead of being the one to lead in physical science, and judicious expenditure in this branch of public work, is far behind not only the cities of Europe, but some of the comparatively smaller towns of our own country.

It is earnestly hoped that the City Councils will at an early day give to the board such authority as may be necessary to enable it to undertake and complete such surveys as will be requisite.

Pipes of all sizes, laid for the supply and distribution of Croton water, to December 31, 1862.

TIME.	48.	36.	30.	24.	20.	16.	12.	10.	6.	4.	TOTALS.
Previous to July, 1849	.....	60,838	25,796	5,400	20,275	13,125	225,140	5,875	608,107	.....	1,024,051 ft., or 193 miles 5,011 d.
July to December, 1849	.....	.....	.....	.....	.....	963	2,490	.....	9,402	7,491	20,346 " 8 " 4,806 "
Jan'y to December, 1850	.....	540	9,040	.....	4,860	.....	2,375	.....	30,599	969	41,328 " 7 " 4,806 "
" 1851	.....	.....	.....	.....	2,720	.....	18,759	.....	42,817	928	65,199 " 12 " 1,859 "
" 1852	.....	.....	.....	.....	3,650	.....	12,171	.....	47,714	.....	63,535 " 12 " 174 "
" 1853	3,500	.....	5,195	.....	.....	.....	996	.....	24,161	.....	33,852 " 6 " 2,192 "
" 1854	587	.....	.....	.....	1,765	.....	5,009	.....	39,293	.....	46,575 " 5 " 4,175 "
" 1855	.....	.....	10,582	.....	1,402	.....	6,068	.....	18,784	.....	36,921 " 6 " 5,141 "
" 1856	.....	.....	.....	.....	102	.....	2,731	.....	25,702	129	28,663 " 5 " 8,583 "
" 1857	.....	.....	1,919	.....	.....	.....	3,089	.....	24,193	.....	29,201 " 4 " 2,100 "
" 1858	.....	.....	.....	.....	6,460	900	1,040	.....	11,150	.....	19,550 " 3 " 8,710 "
" 1859	.....	.....	.....	.....	.....	.....	3,008	.....	15,733	.....	18,741 " 3 " 2,901 "
" 1860	.....	.....	.....	.....	.....	.....	6,602	.....	76,431	.....	82,933 " 6 " 1,378 "
" 1861	.....	.....	.....	.....	.....	.....	5,265	.....	24,767	.....	30,032 " 7 " 2,812 "
" 1862	.....	.....	.....	.....	.....	.....	3,010	.....	21,713	.....	25,023 " 4 " 4,293 "
	4,087	60,878	44,532	5,400	41,324	14,978	298,199	5,875	1,020,074	9,472	1,505,149 ft., or 285 miles 345 ft.

The present department was organized in July, 1849. The first line in the table gives the quantity in use at that time; the others, the quantities laid each year since. The figures at the head of the columns indicate the internal diameter of the pipes in inches.

OFFICERS OF THE CROTON AQUEDUCT BOARD.

President Commissioner,
THOMAS STEPHENS.

Assistant Commissioner,
ROBERT L. DARRAGH.

Commissioner and Engineer,
ALFRED W. CRAVEN.

Bureau of Pipes, Sewers, and Pavements,
AARON B. ROLLINS, *Water Purveyor,*

Bureau of Water Rents,
WILLIAM C. RHODES, *Water Registrar.*

REPORTS OF GAS-LIGHT COMPANIES.

ANNUAL MEETING OF THE NEW CITY GAS COMPANY OF MONTREAL, C. E.

The Annual Meeting of the company was held on the 2d March, instant, at their office, in Griffintown.—Henry Mulholland, Esq., in the chair.

Annual Report of the Directors to the Shareholders of the New City Gas Company of Montreal.

In comformity with the provisions of the Company's Charter, the directors now submit the sixteenth annual report of the operations of the works, together with the managing director's report, also the company's working account and balance sheet for the year ending 31st December last, all of which they trust will be found satisfactory.

The directors being deeply impressed with the importance of supplying gas to the public at the lowest rate possible, and having had under consideration the substitution of petroleum, or rock oil, for coal as a material, the employment of which it was thought would enable them to reduce the cost of production, they determined to thoroughly investigate the matter, and for that purpose a committee of five directors was appointed in April last, and the services of Dr. T. Sterry Hunt having been secured, he was desired to visit Western Canada with the managing director and the superintendent of the works. The deputation proceeded to Toronto and Niagara in May last, and inspected several portable works in operation there, and after a careful examination into the details of the working and cost of manufacturing gas from petroleum, as compared with the cost of gas from coal, the deputation in their report to the committee, after furnishing valuable details of the different apparatus employed, together with information received from the the parties using same, cost of oil, yield of gas per gallon, and various other particulars, conclude by stating that whatever facilities may exist for making gas from petroleum on a small scale, very serious difficulties would have to be encountered before it could be made available for the lighting of large cities; the cost, also, of production having been found to exceed that of gas from coal, they consider that the advantages are all on the side of the company continuing the use of the latter for the manufacture of gas for illuminating purposes.

The directors would also remark that they availed themselves of the opportunity of Dr. Hunt's sojourn in England last summer to have him make particular inquiry as to whether any change could be beneficially introduced into the company's works, with a view to making them more productive, and on his return his reply was, that after due inquiry he had nothing to suggest. Our works, so far as his observation had gone, appeared in their *ensemble* to possess all the modern improvements.

The corporation having made application during the past year for a reduction in the price charged for the street lamps, and the directors being very desirous of meeting the views of the corporation to any extent consistent with a due regard to the interests of the company, a committee was appointed for the purpose of examining into and reporting on the matter, and after a careful examination into the expenditure by the company for the lighting &c., of the lamps, a conference on the subject was had with a special committee of the corporation. Correspondence in the matter having also taken place, the directors have made the corporation a proposal, and the offer being based on calculations carried to the extreme verge of economy, they trust it will be accepted, as any further reduction in the price of lighting the lamps would involve the company in a loss.

Gas having now become a great public necessity, and your directors being desirous of furnishing it at the lowest price possible, have pleasure in stating, that after a careful calculation of expenditure and the possible increase of consumers, they decided again to reduce the price from 15s. to 14s. net per 1,000 cubic feet, which arrangement went into operation in November last, this being the third reduction since 1859, and equal to 20 per cent. on the former price of 17s. 6d. net. The directors may reasonably expect that the public will, with these facts before them, be satisfied that the company are doing all in their power to furnish gas at as cheap a rate as possible.

Your directors, after the making up of the accounts for the past year, have declared a semi-annual dividend of four per cent., payable on the 16th March instant.

The books of the company, together with the working account and balance sheet now on the table have been audited by Mr. J. Plimsol, accountant, and found correct, as certified by the accompanying report.

It has become the painful duty of the directors to announce the recent removal by death of the highly-esteemed President of the company, the late Thomas Molson, Esq.

The following directors retire by rotation, all of whom are eligible for re-election:—William Dow, Henry Thomas, Henry Mulholland, and Hon. Edouard Masson.

A fifth director will require to be elected to fill the vacancy caused by the death of Thomas Molson, Esq.

HENRY MULHOLLAND,
Acting Chairman.

OFFICE OF THE NEW CITY GAS COMPANY,
Montreal, 2d March, 1863.

MANAGING DIRECTOR'S REPORT.

To the Directors of the
New City Gas Company of Montreal:

Gentlemen,—I respectfully submit for your consideration my annual report of the operation and condition of the company's works for the year ending 31st December last.

STREET MAINS AND SERVICE PIPES.

The New Street Mains laid during the period referred to amount to 644 yards.

Main Pipes lifted and replaced by orders of a larger size, 1246 yards. Making the total amount of street main now laid in the city equal to thirty-seven (37) miles and 143 yards.

The New Service Pipes laid during the same period is 151.

NUMBER OF CONSUMERS AND STREET LAMPS.

	Street Lamps.	Consumers.
For the year ending 31st December, 1861	604	2,584
Do. do. do. 1862	604	2,665
Increase	000	81

The gas manufactured in 1861 was.....46,735,000 cubic fee t
Do do. 1862 was.....55,103,000 do.

Increase..... 8,368,000 do.

IMPROVEMENTS AND EXTENSIONS.

In this department of the company's operations I have to report the erection of an exhauster which was completed in November last, and has continued to work most satisfactorily ever since. The advantages to be derived from the outlay are considerable, as by the action of the exhauster, the retorts are relieved of a pressure of from 5 to 6 inches, thereby causing them to last much longer, and increasing the yield and quality of the gas.

A new governor or pressure regulator has been substituted for the old one, thereby affording facilities for regulating the pressure on the street mains superior to those previously possessed.

The new station meter has arrived, but it reached us too late in the season last fall to admit of its being placed in position, its large size requiring the roof of the "meter house" to be raised in order to receive it.

During the year a small gas-works has been constructed, for the purpose of testing coal, and other material used in the manufacture of gas. It contains two small retorts with condensers, purifiers, and a gas-holder, 8 feet by 5; it has been erected on the wing adjoining the photometer room, and will be advantageous to the company by the facilities it will afford for ascertaining the yield of gas from different qualities of coals, also the density of the gas, and the amount of condensation under varying temperatures, and from long storage in the gas-holder, &c.

The following extensions will be required during the approaching season: The main pipe in William street, being the feeder to McGill and St. Paul streets, is now found to be too small, and will have to be lifted and replaced by a larger one; alterations and additions will also require to be made to the pipes in Craig street, in order to furnish a better supply of gas to the low-lying localities in St. James's and St. Mary's Wards.

Repairs must also be made to the walls and roof of the old-tank house. The foregoing are all that occurs to me at present as being specially necessary, and I

have pleasure in stating that the various departments of the company's works are in excellent condition.

The enlargement of the company's office, referred to in a previous report, was effected in the early part of last year, and has afforded the increased accommodation required for carrying on the business, and also as a matter of public convenience appears to be fully appreciated.

In conclusion, I have much pleasure to state that the officers of the company have discharged their several duties with zeal and efficiency.

All of which is respectfully submitted.

L. Beaudry,
Managing Director.

Office of the New City Gas Company,
Montreal, 24th February, 1863.

NEW CITY GAS COMPANY OF MONTREAL.

Working account from 31ts December, 1861, to 31st December, 1862.

Dr.

To Coals and Rosin, Carbonized,—value....		$41,966 38
" Salaries...		7,580 00
" Stokers and Blacksmith.....	$9,508 55	
" Pipe-Layers and Laborers.....	4,388 53	
" Gas-Fittings.....	2,093 55	
" Lamplighters' Wages and Lamp Fittings.	3,000 57	
		18,991 20
" Retorts.....	3,103 48	
" Fire Brick and Clay Account.....	1,815 86	
		4,919 34
" Carpenter and Smith Work, Lumber, &c.	515 40	
" Interest Account.....	3,025 88	
" Water Rent, &c.....	220 95	
" Ground and Office Rent.....	484 66	
" Corporation, for Assessment, Business Tax, &c.....	1,381 95	
		5,628 58
" Lime and Baskets, for Purifying.....	831 30	
" Cartage Account.....	1,658 43	
" Printing, Advertising, and Stationery, &c.	490 62	
" Highwines.....	148 44	
" Paints, Oils, Glass, &c.....	387 60	
" Hardware Account.....	421 49	
" Castings, Plumbing, Brass-Work, &c.....	127 04	
" Auditor's Services.....	100 00	
" Notarial and other Professional Services.	444 27	
" Wear and Tear, General.....	10,000 00	
" Insurance Fund.....	4,000 00	
" Miscellaneous Expenses.....	184 92	
		18,794 11
		97,879 61
Surplus.....		38,812 66
		$136,692 27

Cr.

By Gas Rents (Revenue 1862,.....	$116,042 46
" Coke Sales.....	16,999 06
" Tar.....	2,372 05
" Breeze.....	649 50
" Sales Old Metal, &c.....	629 20
	$136,692 27

E. & O. E. Montreal, 31st December, 1862.

Geo. Ronson, Secretary.

Certified to be correct.—John Plimsoll, Auditor.

Balance sheet from 31st December, 1861, to 31st December, 1862.

Dr.

To Capital Stock Paid up.....	$299,240 00	
" New Stock.....	49,470 00	
" Amount Borrowed on Interest	44,800 00	
Total Capital of the Company.....		$393,510 00
" Amount of Constitut non rachetable..	600 00	
" Dividends' Amount Unpaid.....	1,305 42	
" Capital and Scrip Certificate Account.	864 00	
" Insurance Fund.....	4,000 00	
" Open Accounts, (amount due).....	14,957 30	
		21,726 72
" Profit and Loss Account.....		31,327 87
		$446,564 59

Cr.

By Gas-Works.....		$351,564 44
" Ann Street Property Account.....		3,014 89
" Cash on hand.....	$14,882 49	
" Coals.....Value.	20,403 60	
" Meters.....	27,664 39	
" Iron Pipe, Tubing, &c., on hand.....	12,027 78	
" Retorts, Cast-iron and Clay.....	1,760 97	
" Fire-brick and Clay.....	2,648 03	
		79,387 26
" Open Accounts.....		12,598 59
		$446,564 00

E. & O. E. Montreal, 31st December, 1862.

Geo. Ronson, Secretary.

Certified to be correct.—John Plimsoll, Auditor.

[Copy.]

Place D'Armes,
Montreal, 23d February, 1861.

To Messrs. the Directors of the New City Gas Company, Montreal:

Gentlemen,—I beg to report having, in accordance with your appointment, audited the books of the company, for the year ending 31st December, 1862.

It is very gratifying to me, as the result of a rigid investigation, to be enabled to state that I have failed to detect the slightest inaccuracy throughout the whole of the record of the year's transactions; and, consequently, have been able to certify, authoritatively, to the statements presented herewith as the financial result of the operations of the year now closed.

It is my duty, also, to state that, whenever required, the fullest explanation has been given, every facility in the progress of my work afforded me, and vouchers furnished to establish every disbursement; whilst the books, themselves, have been so well kept—on a system at once simple and lucid—as to greatly facilitate their audit, and also to reflect, in my opinion, great credit on your officers having them in charge.

I have the honor to be, gentlemen,
Your obedient servant,
(Signed) John Plimsoll.

THE PHILADELPHIA GAS-WORKS.

From a Philadelphia daily paper we take the following account of recent *political* changes which have taken place in the gas-works of that city:

The securing of a Democratic majority in the Board of Trustees of the Philadelphia Gas-Works has caused a great excitement among the "faithful," and there have been dozens of applicants for every position within the gift of the Trustees. The Board stands seven Democrats to five Republicans. The election took place on Friday evening, and officers and clerks were chosen. It so happened that one of the Democratic members was absent, in consequence of family affliction, and another Democrat bolted from the caucus nominees for some of the most important offices. The effect was a very protracted session of the Board, and the following the result of the election:

Chief Engineer—John C. Cresson, retained.

Cashier—Wm. Fennell, retained.

Registrar—John P. Murta, retained.

First Assistant Engineer—Charles M. Cresson, retained.

Second Assistant Engineer—George L. Gay, retained.

Superintendent of Distribution—John A. Miskey, retained.

SEVENTH STREET OFFICE.

First Clerk—John D. Miles, vice Samuel M. White.

Auditor of Consumption—John F. Jaque, vice Wm. S. Ernest.

Clerks—Edward P. Dunn, James Agnew, James Simmons, George Bloomer, John Fredericks, Chas. J. Austin, Edward P. Hustler, Andrew J. McGrath, John Loudenslager, J. G. Kline (retained), Wm. F. Nichols, Thomas Mains, J. L. Painter, Thomas W. Weaver, Thomas R. Brown (retained), Anthony Laws, Charles R. Hemphill, John B. Makins.

Those ousted were as follows: George B. Miller, B. Lewis, G. W. Cuppuck, G. F. Jordan, L. J. Quinn, W. D. Deal, A. E. McGrath, C. P. Ferry, W. M. Bull, George Kern, George Bloomer, B. K. Afflick, Charles Haverstick, C. F. Hendry, George W. Koons, Clinton Anderson.

Superintendent of Shops— —— Dougherty, vice Edward H. Hirons.

Chief Inspector of Fittings—Daniel P. Vandegrift, vice George Weigand.

Assistant do.—Hugh Kennedy, vice Geo. F. Yhost.

Assistant do.—Thomas Connelly, retained.

Assistant do.—John Laughlin, vice James Spence.

Superintendent of Meter Inspections—John J. Foster, vice Geo. W. Jermon.

Storekeeper of Lamp Department—Alex. F. Gallagher, vice Edward Stroud.

Meter Inspectors—Jacob Blight, J. H. Weeks, Richard Wafer, Edward Thomas, Thos. W. Sheenan, Pat. Campbell, W. L. Nutt, John McMullin, Thos. McLaine, Edw. P. McGinley, Robert Lynch, Francis McQuade, Mark McElwee, John Cooney, Cornelius Kelly, John P. Duggett, John Harrington, Jas. Henly, Alex. A. Eager (retained), Samuel Comegys, Samuel Gillan, Wm. G. Glenn, Pat. Fox, John Dannegan, Enos Dougherty.

Those ousted were: Geo. W. Taylor, B. W. Weeks, Jas. Simpson, C. J. Summers, J. M. Keech, John Fowler, George Sterr, J. V. Kellinger, John Carroll, John Roberts, William Freeborn, E. Dalrymple, B. Strusman, C. B. Barrett, John Simpson, Jas. Glading, D. B. Morrell, Edward Spain, Richard Hicks, Jas. Harmstead, George W. Morad, H. L. Aitkens, Wm. Rose, Samuel Davis.

SPRING GARDEN OFFICE.

Registrar—Wm. S. Winship, vice D. H. Styer.

Clerk—Thomas Kernan, vice Peter A. Keyser.

" Ebenezer Cobb, vice Geo. W. Stull.

" James P. Sherry, vice Wm. Glenn.

" Francis Hart, retained.

" Richard A. Boyer, retained.

Pipe Inspector—James Wise, retained.

" Anthony Mimick, vice D. L. Davis.

" Chas. Miller, vice E. K. Shelmerdine.

Superintendent of Meter Inspections—John Mulholland, vice Geo. W. Korndoffer.

Meter Inspectors—Thomas J. Hemphill, vice J. Collam; Hudson R. Ridgway, vice J. Bardeer; John Carnley, vice Lemuel Sutcliffe; Pat. Boyle, vice Alfred Stimmell; John P. Campbell, vice J. P. Fraser; Bernard Gunn, vice Hugh Giberson; Peter Deveraux, vice Isaac Cramer; Dexter Johnson, vice H. G. Cress; John M. Devinney, vice R. H. Clinton.

WEST PHILADELPHIA OFFICE.

Registrar—Alex. C. Garvin, vice Jos. Newell.

Inspector—Thos. Ainsworth, vice G. W. Shultz.

Meter Inspector—Joshua Evans, vice W. H. Elison.

GERMANTOWN OFFICE.

Registrar—Charles D. Thomas, retained.

Inspector—James J. Mullen, vice John Jefferd.

FRANKFORD OFFICE.

Registrar—John Deal, vice Jonathan Brooke.

MANAYUNK OFFICE.

Registrar—John Bowker, retained.

Inspector—C. J. McGlinchy, vice J. L. Warren.

WORKS IN NINTH WARD.

Chief Clerk—William J. Malcolm, retained.

Clerk—Pat. Mealy, vice W. J. Verdeth.

SUPERINTENDENTS OF PUBLIC LAMPS.

First District—John McClay, vice Jos. Baily.

Second District—Thos. L. Dillon, vice H. G. Kirk.

Third District—Jas. Duffy, vice H. Harmstead.

Fourth District—John Mooney, vice W. H. Deshong.

The other officers chosen were old incumbents re-elected, who have long been connected with the department. All the new men who were elected on Friday night are members of the Democratic party. The newly-elected officials will take their places on the first of April.

Fires in New York During the Last Six Months.—The Report of Fire Marshal Baker for the six months from the first of June to the thirtieth of November, 1862, gives a record of the fires and alarms of fire during that period. Altogether there were 183 alarms of fire, among which were the following:

Explosion of empty petroleum barrel, - -	1
Fluid or camphene lamps, - - - - -	6
Kerosene oil lamps, - - - - - -	1
Gas and gas-pipe, - - - - - -	3
Gas-light in window, - - - - -	2

The number of deaths caused by fire was twenty-eight, of which one was caused by the explosion of a kerosene-oil lamp; three by the explosion of fluid and camphene lamps, and one by clothing taking fire from a candle—the remainder being from causes not connected with illuminating agents.

Salem, Ohio.—This gas company, a portion of whose stock is advertised for sale in another part of this Journal, are in a very prosperous condition. The works have been in operation about three years, and are said to be in good repair. The capital stock is $15,675, in 627 shares of $25 each. The net income for the year ending December 31, 1862, was $4,680 65, as the books of the company will show. Salem is a growing town, and the number of consumers is increasing.

ARTIFICIAL ILLUMINATION.

Dr. Frankland delivered a lecture on "*Artificial Illumination*," on Friday evening, February 13. He commenced by stating that it was ten years since he delivered a lecture on the same subject at the Royal Institution. In the interval very little improvement had taken place in the means of producing artificial light; but recently a new illuminating agent had been introduced, and the magneto-electric light had received an important application. The lecturer exhibited and described the electric light; and went on to speak of Dr. Faraday's discovery of the magneto-electric spark, and its application to lighthouse illumination. Professor Holmes' machine, he said, had been in operation at the South Foreland lighthouse for twelve months without break or failure. The electric light, however, was of no use for domestic purposes; its cost was too great, and it was only available where light of the greatest intensity was required. Some improvements, in the form of mechanical contrivances for keeping the carbon poles at proper distances, have been introduced, as instanced in the clock-work arrangement in Dubosc's lamp; and the electric light had received a modification in the substitution by Mr. Way of mercury for the carbon poles. The light emitted from the mercury poles Dr. Frankland showed to be far inferior to that emitted from the carbon points. He stated that it only amounted to one-twentieth; but the battery used was not the best adapted to procure a good light, as it required quantity rather than intensity.

In gas manufacture very little improvement had been made in these ten years. Sulphur was still found in it in considerable and, perhaps, undiminished quantity. It was present in the form of bisulphide of carbon, which was irremovable by the ordinary modes of purification. A method, however, had been devised by the Rev. W. R. Bowditch, the Vicar of Wakefield, by which almost all could be easily got rid of. It consisted in passing the gas over hydrate of lime heated to 400°: by this means the sulphur of the bisulphide of carbon was brought into the form of sulphuretted hydrogen, which was removed by the ordinary oxide of iron purifier. On the small scale, this process was found to take away nearly all the sulphur, and it might, perhaps, answer as well on the large. The lecturer stated that he had never found more than nine or ten grains of sulphur in 100 cubic feet of gas, but he was aware that others had found as much as 40 or 50, and he believed the quantity commonly present was about 20 grains in the hundred cubic feet. Recently, a new illuminating constituent, acetylene, had been discovered in coal-gas, and the discovery may, perhaps, entirely revolutionize the manufacture. At present, a comparatively low temperature is employed in the manufacture of gas; but an intense heat is favorable to the production of acetylene. It is produced when carbonic oxide and carburetted hydrogen are strongly heated together. It would be necessary, the lecturer said, to investigate how this body could be produced on a large scale to increase the illuminating power of gas; but the subject was still *in embryo*. Acetylene may be obtained from gas by passing it through a solution of subchloride of copper, by which means, what might be called an acetylide of copper was produced, in the form of a brick-red precipitate. The lecturer showed that this acetylide of copper was decomposed on the addition of dilute hydrochloric acid, and that the acetylene evolved burnt with a brilliant flame. The acetylide of copper is an explosive compound, which has been the cause of several accidents where gas has been passed continuously through copper tubes. It is exploded by friction, percussion, and by heat.

The use of animal and vegetable oils for illuminating purposes had received no new development in the past ten years; but a new source of light of the greatest importance has been discovered in the oils obtained by the distillation of coals and shales at low temperatures. This oil, however, has recently found a formidable rival in the oil distilled by nature herself. The native oil of the United States and Canada is obtained in immense quantities: from the latter country alone as much as 20,000,000 of gallons have been procured, which, it has been calculated, would give as much light as 180,000,000 of pounds of sperm candles. The importance of these oils could not be overrated. Some accidents had resulted from their use, apparently from careless manufacture, it being necessary to remove the lighter constituent oils before they could be used with perfect safety. The lecturer explained that it was necessary to burn these oils, as well as Young's paraffin oil, in lamps made of some badly-conducting material like glass, so that the oil in the reservoir might not become heated; and he showed the explosiveness of some oils and non-explosiveness of others when heated to 120°.

The following diagram exhibits the illuminating equivalents of various materials, showing the quantities of other substances required to give the same amount of light as would be obtained from one gallon of Young's paraffin oil:

Young's paraffin oil	1.00 gallon.
American rock oil (1)	1.26 "
" " (2)	1.30 "
Paraffin candles	18.6 pounds
Sperm "	22.9 "
Wax "	26.4 "
Stearic "	27.6 "
Composite "	29.5 "
Tallow "	39.0 "

The comparative cost of light was shown in a diagram exhibiting the comparative cost of the light of twenty sperm candles, each burning ten hours, at the rate of 120 grains per hour:

	s.	*d.*
Wax	7	2½
Spermaceti	6	8
Tallow	2	8
Sperm oil	1	10
Coal-gas	0	4½
Cannel-gas	0	3
Paraffin candles	3	10
" oil	0	6
Rock "	0	7 3-6

It was thus shown that paraffin and rock oils are the best sources of light for domestic purposes, inasmuch as they give the largest amount of light with the least development of heat.

Amount of carbonic acid generated, and heat evolved, per hour, in obtaining a light equal to twenty sperm candles, each burning 120 grains an hour:

	Carbonic acid in cubic feet.	Units of heat.
Tallow	10.1	100
Wax Spermaceti	8.3	82
Paraffin	6.7	66
Coal-gas	5.0	47
Cannel-gas	4.0	32
Paraffin oil Rock "	3.0	29

The lecturer then entered upon the chemical and physical principles concerned in the production of light, explaining that it was produced by the incandescence of certain solids or vapors. The incandescence of liquids is never used, and in one case only—the mercurial light—is a vapor employed. In all other cases it is the incandescence of solid carbon. He explained, too, how the light was affected by the pressure of the atmosphere and temperature; a greater pressure of the atmosphere brought more solid particles to incandescence, and a fall of one inch in the barometer involved a reduction in illuminatiug power of 5 per cent. When the air supplied to the burner, or the gas itself is heated, an increased illumination is obtained with the same consumption of gas amounting to 62 per cent.; or, for an equal amount of light, the saving of gas would amount to 33 per cent.

Dr. Frankland then explained the conditions of a good light, and showed that it was necessary that light for ordinary purposes should contain all the colors of the spectrum, as the light obtained in all common modes does. He showed the effects of the monochromatic light of sodium on colors. Solar light, he stated, was defective in showing color, as it was incapable of showing tints brought out by sodium, and that, consequently, a pigment containing these tints would be invisible by daylight. Sunlight passed through a variety of vapors, of which sodium was one, and the lecturer showed how the sodium band in the spectrum was obscured when the light passed through the incandescent vapor of sodium. Solar light, however, had one great advantage over that from all other sources, inasmuch as it was attended with less heat, and, consequently, ordinary daylight produced less discomfort in the eye than any artificial light.

The disadvantage of having heat associated with light was, that the greater part of it was absorbed by the humors of the eye, there causing pain and discomfort. The behavior of the eye towards the heat of a moderator lamp had been examined, and the following diagram represented the amount reflected and absorbed by the various media:

	Eye of ox.	Eye of sheep.	Eye of pig.
Rays reflected at surface of cornea	4	4	4
Rays absorbed by cornea	59.8	56,9	57.5
" " aqueous humor	19.2	—	20.6
" " crystalline lens	6.8	30.7	7.2
" " vitreous lens	2.5	—	1.6
Rays which penetrate to retina	7.7	8.4	9.1
	100.0	100.0	100.0

In conclusion, Dr. Frankland alluded very briefly to the difficulties in the way of applying the discoveries of science to every-day purposes. It was thirty years ago that Reichenbach first made paraffin and paraffin oil in the laboratory, and twenty years elapsed before any practical use was made of them. It was thirty years since Dr. Faraday showed the magneto-electric spark. How long shall we have to wait for any development of thermo-electricity, or the direct transformation of heat into light by electricity? In the magneto-electric machine the transformation was accomplished by the intermediate transformation of heat into mechanical force, by which there was experienced a loss of nine-tenths of the heat force. The man of science was rewarded by the truths which he discovered: it was not his function to apply these truths to useful purposes. That required quite different powers of mind.—*Chemical News.*

GAS IN ENGLAND.

The Yarmouth gas consumers are urging a reduction of the price of gas from 5s. to 4. 6d. and 4s., according to quantity consumed; and threaten a strenuous opposition to a bill which is being applied for by the Company, unless these terms are agreed to.

The Ipswich Gas-Light Company's directors recommend a dividend of 10 per cent., and a balance of 985*l.* to be carried to their reserved fund, at the same time reducing the price of their gas.

The report of the Bury Gas Company's directors also recommends a dividend of 10 per cent. on old capital, and 7½ on the new, besides paying what is called arrears of dividends on years when the percentage was less, and also laying "a solid foundation for the reserve fund" of 3,000*l.* which the law allowed them to make. The report was adopted, and the price of gas reduced from 6s. 8d. to 6s. 3d.

The Tunbridge Company have declared a dividend of 7½ per cent., and the Tunbridge Wells Company have reduced their price from 5s. 10d. to 5s. 5d.

The Stafford Company have declared a dividend of 7 per cent., free of income-tax.

Endeavors are being made at Bristol to have the price of gas reduced to the Plymouth price of 3s., or even lower; and a gas consumer's company is being threatened by the Gas Consumers' Association.

The Malvern Link gas-works are reported to have cost 5,281*l.*, pipes, &c., inclusive; and the company have already declared a dividend of 5 per cent. per annum for the second half-year of their existence.

The Cardiff Gas-Light and Coke Company have resolved to reduce the price of their gas from 4s. 3d. to 4s., in the hope of an increased consumption.

The Newport Gas Company's directors report a depression in consequence partly of the reduction made in the price of their gas, which, however, has not prevented them from dividing the usual 10 per cent. on class A shares, and 3⅝ths per cent. on class B shares; nor from anouncing even a further reduction in price, of 5 per cent.

The Liverpool Company have agreed to a dividend of 5 per cent. for the half-year, being the first since the last reduction in price; which, however, only shows the elasticity of gas dividends under the pressure of reduced prices.—*London Builder.*

OBSTRUCTION OF GAS-PIPES BY NAPHTHALINE.

The observations made by the Engineer of the Gas-Works at Giessen, prove that the obstructions are not found in the mains leading from the gas-holder only, but very often in the service pipes leading to the meter, and that physical causes exist which occasion the deposit of naphthaline in certain passages. These deposits are produced oftenest during depressions of temperature.

At the gas-works of Giessen, the gas passes immediately from the purifiers in a place where the temperature is sensibly very low, and in this passage the deposit shows a great tendency to form.

M. Spielhazen, of the Gothembourg gas-works, in Sweden, reports that a pipe of ten inches diameter, leading to the gas-holder, was obstructed on the 26th of September, at noon, and the pressure, which the morning before had been noticed to be much greater than usual, increased to 4½ and 5 inches. The cause of this was discovered to be a deposit of naphthaline at the passage where the pipe placed under the ground made a bend at a right angle. At night, about ten o'clock, this pipe was cleaned by means of steam, and the pressure returned to its normal state.

The thermometric observations on the 25th and 26th of September were:

		Air.	Gas.
Sept. 25th, morning,	at 8 o'clock,	48.2°	59.°
" " afternoon,	at 4 "	59.	68.
" " evening,	at 8 "	42.8	60.8
" 26th, morning,	at 8 "	41.	57.2
" " afternoon,	at 4 "	57.2	66.2
" " evening,	at 8 "	44.	59.

Messrs. Spielhazen and Dechelhauser, of Giessen, are of opinion that the cause of the obstructions should be sought for in connection with the state of the atmosphere. It has been remarked at Gothembourg that they have been observed three or four times, and always in the autumn.—*Journal fur Gasbeleuchtung.*

THE SEWER OF PARIS.

Victor Hugo, in his admirable work of fiction, *Les Miserables*, thus refers to the sewer of Paris:

"Imagine Paris, taken off like a cover; a bird's-eye view of the subterranean net-work of the sewer will represent upon either bank a sort of huge branch engrafted on the river. Upon the right bank, the belt sewer will be the trunk of this branch, the secondary conduits will be the limbs, and the primary drains will be the twigs. This figure is only general, and half exact; the right angle, which is the ordinary angle of this kind of underground ramification, being very rare in vegetation. We shall form an image more closely resembling this strange geometric plan by supposing that we see spread out upon a background of darkness, some grotesque alphabet of the East, jumbled as in a medley, the shapeless letters of which are joined to each other, apparently pell-mell, and as if by chance—sometimes by their corners, sometimes by their extremes.

"The excavation of the sewer of Paris has been no small work. The last ten centuries have labored upon it, without being able to complete it any more than to finish Paris. The sewer, indeed, receives all the impulsions of the growth of Paris. It is, in the earth a species of dark polyp with a thousand antennæ, which grows beneath at the same time that the city grows above. The old monarchy had constructed only twenty-five thousand four hundred and eighty yards of sewers; Paris was at that point on the 1st of January, 1806. From that epoch, of which we will speak directly, the work was profitably and energetically resumed and continued; Napoleon built (the figures are interesting) five thousand two hundred and fifty-four yards; Louis XVIII., six thousand two hunred and forty-four; Charles X., eleven thousand eight hundred and fifty-one; Louis Philippe, ninety-seven thousand three hundred and fifty-five; the republic of 1848, twenty-five thousand five hundred and seventy; the existing regime, seventy-five thousand one hundred; and at the present hour, two hundred and forty-seven thousand eight hundred and twenty-eight yards—a hundred and forty miles of sewers—the enormous entrails of Paris; obscure ramification always at work; unnoticed and immense construction.

"Paris in 1806 was still almost at the figure of sewers published in May, 1663; five thousand three hundred and twenty-eight fathoms. According to Bruneseau, on the 1st of January, 1832, there were forty-four thousand and seventy-three yards. From 1806 to 1831, there were built annually, on an average, eight hundred and twenty yards; since then there have been constructed every year eight and even ten thousand yards of galleries, in masonry of small materials, laid in a foundation of concrete. At thirty-five dollars a yard, the hundred and forty miles of sewers of the present Paris represent nine millions."

PETROLEUM ITEMS.

The Pennsylvania Oil Trade.—The Oil City *Register* estimates the present consumption of refined oil per day in the United States to be from 1,500 to 2,000 barrels. The production of the wells in that place is spoken of as follows:

"The highest estimate of the daily production of our wells here that we have heard lately, including the Caldwell well, recently struck by Dilworth & Ewing, is about 5,000 barrels per day. Many estimate the daily product at a far less amount. We propose to leave the matter open for a short time, hoping that our health will be sufficiently restored to enable us to give a detailed statement of the whole matter. Parties in the trade can draw their own conclusion as to the correctness of the above figures. We merely give them to the public as nearly correct as we can at present ascertain them. Sales have been made during the week as high as $1 50 and $1 75. The general selling rate has been $1 25. Quite an amount has been sold at the Sherman well at this price, which we give as the ruling quotation. The stock at our wharves will not exceed 3,000 barrels. The stock on hand and for sale along the creek is not heavy. The river is not navigable by boats at present, save for the smallest class. Price of barrels, for second-hand, $1 25@$1 50. Prime new, $2 25@$2 50, and a great scarcity of the article at that. Freights to Pittsburg 75 cents to $1. There is from 18 to 20 inches of water in the river channel and falling. The weather is cool, with an occasional flurry of snow. We do not look for a freshet for a week or so. The market closes firm and buoyant. The pond freshet on Saturday last was a successful one, and brought down about 15,000 barrels of oil."

Petroleum Trade of Canada.—The rapidity with which the demand for petroleum has grown is without parallel in the history of any trade. Immense as has been the production, and illimitable as the supply at one time appeared, it has not yet exceeded the requirements of the public, and next to its fortunate discovery and immense yield, the greatest wonder has been its universal and rapid adoption as an article of prime necessity. Throughout the Province the article has found its way into almost every house, from the most wealthy to the most lowly, and the local demand has kept pace with the largely increased facilities for its production and preparation. This is the more surprising, when it is remembered that very unusual difficulties have surrounded the business from the outset. With an intensely disagreeable and stubborn odor to subdue, and a supposed dangerous inflammable property to erradicate, both to be accomplished without destroying its illuminating power, it is a matter of great surprise that the prejudice which would in consequence naturally arise, has so rapidly and so entirely disappeared. These difficulties, too, have been overcome generally by men who had neither theoretical nor practical knowledge of the work in which they were engaged, with inadequate capital and the absence of many facilities which experience and success enables them now to command. The growth of the demand in Canada, notwithstanding all those disadvantages, makes certain beyond all question a universal consumption of the oil in the older countries, to which a large amount has been shipped from this continent during the year. Its economy, brilliancy, and cleanliness, will everywhere recommend it, and once introduced into general use, there will be hardly any limit to the demand. The year just passed is the first in which any quantity of Canadian oil was exported, and though every facility had to be provided and every connection made, the result on the whole was satisfactory. Seventeen vessels loaded with Canadian petroleum cleared for Europe through the St. Lawrence, of a total tonnage capacity of 15,016, containing some 35,000 barrels, or 1,279,000 gallons. The ports of destination were Cork, "for orders," 6 cargoes; Liverpool, 3; London, 3; Glasgow, 1; Dundee, 1; Bremerhaven, 1; Demerara, 1; Australia, 1. The total shipments of petroleum from the United States in 1862, amounted to 10,514,000 gallons against 1,800,000 in 1861. Great as this increase is, the bulk of it was shipped during the last four months of the year, and the present enormous movement of the article in the same direction, leads to the belief that the increase in the current year will be even greater in proportion.—*Toronto Globe.*

London Petroleum Trading Company.—Circumstances daily indicate the necessity there existed for the employment of associated capital in the better regulation of the trade in rock-oils; and the information published in the last number of the *Oil Trade Review*, presented to our subscribers, confirmed our opinion, that, unless some more efficient method is speedily adopted for the adequate development of this trade between America and England, we cannot look forward to the prospect of a steady market. The present uncertainty of the quotations may, in a great measure, be accounted for in the limited means provided by individual enterprise, unequal to the task of surmounting the difficulties encountered in the collection and transport of this valuable product. Although the late news from the Canadian wells does not at first sight appear very encouraging, we are satisfied that a vast and profitable field is open for the investment of English capital in the expansion of this most important branch of commerce; for the Canadian wells are generally only sunk to the depth of 150 to 160 feet, whilst the Pennsylvanian are 600 to 800. When the depth of the former is increased it is confidently anticipated that the supply will be renewed. It is needles to mention that, although, in defiance of serious obstacles, the importation of this article has assumed such vast proportions, the trade may yet be considered in its infancy; and when our supply becomes more uniform, science will, no doubt, discover fresh applications and new modes of consumption.

With the above-mentioned objects in view, a prospectus has been issued of the Petroleum Trading Company, now in course of formation, with a capital of £100,000 in 10,000 shares of £10 each. The list of directors includes the names of some very influential and well-informed business men, which, in a great degree, guarantees the practical character of the undertaking. The company is to be established under the Limited Liability Act, restricting the responsibility of the shareholders to the amount of the shares for which they subscribe.

The attention of our capitalists has hitherto been chiefly directed to the wells of Canada, while the resources of the oil regions in Pennsylvania have, comparatively speaking, been neglected. The spontaneous flow of the liquid at the former locality has almost entirely ceased; and, though there is every reason to believe that almost inexhaustible quantities still remain to be worked, the inconvenience of bad roads and the absence of an adjacent railway station render the transit a matter of undue expense and uncertainty. The Petroleum Trading Company intend to import chiefly from the wells of Pennsylvania, though their efforts will be directed to the working of all the present oil-producing districts, and the discovery of new resources. One healthy feature of the undertaking is, that certain firms, connected with the direction, have taken shares to the amount of £40,000. It is stated that the company has taken over the business of the largest importers, and the co-operation of the Atlantic and Great Western Railway has been secured, the name of one of directors of which we find amongst its promoters. The petroleum will be carried in iron tank vessels, especially adapted for the trade, and, at the same time, as suitable for general purposes. Two of these tank ships are in course of construction, and one iron vessel is stated to be ready for despatch.

There is every probability of the speculation succeeding, as the list of directors comprise men of rare administrative ability; and implicit confidence may be entertained that the accounts of the company will, from time to time, undergo a careful scrutiny.

In the next number of the *Oil Trade Review*, we hope to be enabled to give our readers some account of the progress of the undertaking.—*London Grocer.*

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month, and is the recognized official organ of

LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS-WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!!!

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THE

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

C. ELTON BUCK, ... EDITOR.

WEDNESDAY, APRIL 1, 1863.

In connection with the statistics of the New York city gas-light companies, published in our number of March 2d, we now present those of the six companies forming the

GRAND GAS-LIGHT COMBINATION OF LONG ISLAND, N. Y.

Distant and foreign readers may not know that Long Island is a strip of land forming part of the State of New York, its greatest length being 115 miles, and its general breadth about 20 miles. It is bounded on the west by the East river, and on the east by the Atlantic ocean. The East river, which separates it from the city of New York, is half a mile in width, and is traversed by the large steamers of no less than ten ferries, every minute of the day, carrying foot passengers and vehicles of every description and size.

Brooklyn, the third city of the Union, covers 10 miles in length of Long Island; and has, by recent consolidation (1855), swallowed up Williamsburgh and Bushwick, thus extending from the lower boundary of Greenwood cemetery to Newtown creek, its aggregate population exceeding 350,000.

Its elevated position—70 feet at the Heights, above tide-water—makes it a beautiful and healthy residence, which is availed of in the superb streets of costly residences that distinguish it from other cities.

Within the boundaries of Brooklyn are the extensive Atlantic docks, manufactories of all sorts, foundries, ship-yards, warehouses, several large hotels, whole streets of shops and offices, a City Hall, and all the County Courts, an Academy of Music, a few theatres, and many churches.

The old Brooklyn Gas-Light Company, chartered in 1825, had the monopoly of lighting the city, until, spoilt by success, it sealed its own doom. Like Sinbad the sailor, who clasped his legs around the neck of the Old Man of the Sea, and soon found himself going into deep water, the Brooklyn Gas Company, with its legs around the neck of the people, found the waves coming up to its eyes. Never was so profitable a business thrown away so needlessly.

The people, dissatisfied with the mismanagement of that company, obtained from the Legislature a charter for an opposition—the Citizens' Gas-Light Company—which was organized in 1859, and went immediately into operation. Its district embraces that indicated on the adjoining map, and its mains are being quietly laid by the side of those of the old company, the latter lowering the prices of gas in those streets where the Citizens' pipes are laid, to $1.25 per 1,000 feet, while it is at $2.50 in all others. The Legislature are about passing a bill prohibiting this sliding scale of prices, which will compel a uniform charge for gas.

This JOURNAL fell under the displeasure of the old company when we chucked the new-born company under the chin, and we were punished to the extent of its subscription for one copy—$3 per annum—rather a severe loss to us, and a somewhat troublesome arrangement for the company, who are obliged to send over regularly for a few copies of each number to keep posted about themselves; some of the directors declaring that we are of more service in keeping the majority straight than we imagine. It is our habit, moreover, when a gas company withdraws their subscription from us, to receive the punishment meekly, but never to renew the connection, insisting that the punishment, to be effectual, should be permanent.

Although the Citizens' Gas Company's district is so extensive, it has, as yet, attacked only the Brooklyn Company, after tapping whose mains it will travel north, and web-in the entire island in due time.

We now proceed to the details of the various companies:

CITIZENS' GAS-LIGHT COMPANY, BROOKLYN.

Organized 1859.

Capital, 50,000 shares, at $20 each, $1,000,000.

Average annual dividends, 3½ per cent.

Last regular semi-annual dividend, 3½ per cent.

The surplus earnings have been expended in extending the company's works.

Market value of stock, par to 105 per cent.

Directors,

WM. P. LIBBY, Pres.,	HERVEY WARREN, Sec.
EFFINGHAM H. NICHOLS,	EDWARD ANTHONY,
WILLIAM SPENCE,	JOHN STEWARD,
JAMES H. STEBBINS,	SAMUEL S. POWELL.

This company is steadily progressing, in every sense of the word. Its business is increasing by the popularity of the company, whose kindly intercourse with the citizens is fully repaid by their confidence and patronage.

BROOKLYN GAS-LIGHT COMPANY.

Organized 1825.

Capital, 80,000 shares, at $25 each, $2,000,000.

Average annual dividends for past 10 years, 10 per cent.

Last regular semi-annual dividend, 5 per cent.

Market value of stock, supposed about 110 to 120 per cent.; gradually falling towards par as the value of the CITIZENS' rises.

Directors,

ARTHUR BENSON, Pres.,	V. G. HALL, Sec.
JAMES HOW,	JOHN SCHENCK,
CYRUS P. SMITH,	JAMES HUNTER,
PETER CORNELL,	J. K. BRICK.

A desperate effort is said to have been made to revive the old BROOKLYN by amalgamating it with the CITIZENS', but the latter company have no idea of being converted into a galvanic battery, to "quicken" the dead or dying.

GREENPOINT GAS-LIGHT COMPANY.

Organized 1853.

Capital, 1,000 shares, at $50 each, $50,000.

Average annual dividends, 10 per cent.

Last regular semi-annual dividend, 5 per cent.

Market value of stock—not to be had at any price.

Directors,

FRED. H. WOLCOTT, Pres.,	JOSIAH CARVER, Sec. & Tr.,
GEO. F. ALLEN,	CHAS. M. WOLCOTT,
SMITH CLIFT,	JAMES KENT.

This company manage to keep their affairs very quiet. The stock is owned by a few, is never speculated in, rarely changes hands, and when on sale a customer is always to be had within the company's four walls.

It is one of the snuggest little gas companies in the United States. The President, Mr. WOLCOTT, is an old and esteemed merchant, of the highest standing in the community.

WILLIAMSBURGH GAS-LIGHT COMPANY.

Organized 1850.

Capital, 20,000 shares, at $50 each, $1,000,000.

Average annual dividends, only 8 per cent., owing to a heavy defalcation which occurred eight or ten years ago, from which the company has at length recovered, and is now progressing finely.

Last regular semi-annual dividend, 5 per cent.

Market value of stock, 150 per cent., a rise of 35 per cent. in two months.

Directors,

B. H. HOWELL, Pres.,	C. F. BLODGETT, Sec.,
DANIEL T. WILLETS,	R. R. WILLETS,
H. A. POLHAMUS,	LAURENS WATERBURY,
EDWARD W. FISKE,	JOSEPH R. THOMAS.

This Company lies in the path of the Citizens', and promises to come in for a share of competition in its turn. What the result will be cannot now be predicted; but, if the Williamsburgh is managed with any degree of shrewdness or judgment, there will be no dispute or hostility between the two companies when the pickets meet.

HUNTER'S POINT GAS-LIGHT COMPANY.

These works are but recently finished, and the business is in too crude a state to report upon at present.

ASTORIA GAS-LIGHT COMPANY.

Capital, 400 shares, at $50, $20,000.

Have made no dividends to speak of, and none are in prospect at present.

Directors,

JOHN J. HALSEY, Esq., is President, Secretary, and full Board of Directors.

This establishment has been through purgatory. It was sold out twice within one week; the first purchaser, finding he had bought an elephant, did not make his appearance to complete his contract. The company is now doing well, however, and making money. A full account of the last sale of the works of this company may be found on page 299 of our second volume. They were purchased by Mr. J. J. Halsey for $10,375. The entire cost of these works is said to have been, originally, $16,631 27.

RECAPITULATION OF LONG ISLAND GAS-LIGHT COMPANIES.

CITIZENS', Brooklyn, - - -	1,000,000
BROOKLYN, - - - - -	2,000,000
GREENPOINT, - - - - -	50,000
WILLIAMSBURGH, - - -	1,000,000
HUNTER'S POINT, - - - -	30,000
ASTORIA, - - - -	20,000
Total, - - - - -	$4,100,000

GRAND RECAPITULATION.

GAS-LIGHT CAPITAL OF NEW YORK ISLAND,	7,900,000
" " OF LONG ISLAND, -	4,100,000
GRAND TOTAL, - - -	$12,000,000

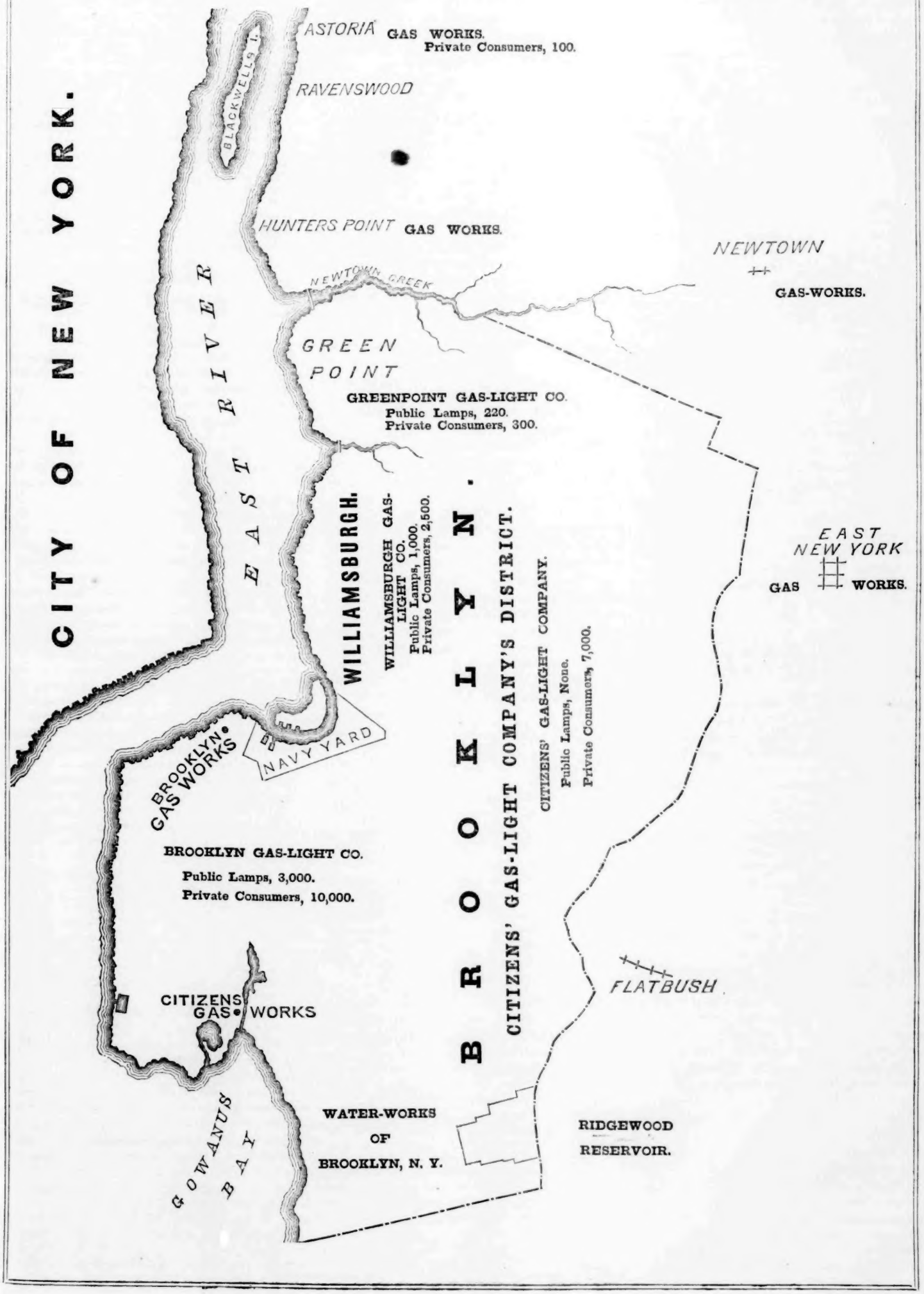
Here, then, can be seen at a glance by what power the two islands lying parallel to each other, and connected by floating bridges of ceaseless ferry-boats—in fact one city—are held together.

TWELVE MILLIONS OF DOLLARS are employed in lighting them. An aggregate population of more than TWELVE HUNDRED THOUSAND people contribute to the enormous revenue of these ten gas-light companies.

These are the securities which the AMERICAN GAS-LIGHT JOURNAL represents, and labors earnestly and disinterestedly to elevate and strengthen. Is not the enterprise a noble one? How far we have been of service to it, the records of the gas-light interest of the country will fully demonstrate.

Can any one, familiar with the daily intercourse of these two islands, doubt the present or prospective value of the securities which represent their light by night? We look upon them as entirely inappreciable, and as beyond the power of man to check or estimate.

GRAND GAS-LIGHT COMBINATION OF LONG ISLAND, N. Y.



POLITICAL GAS COMPANIES.

In another part of this number of the JOURNAL will be found a statement of the recent political changes in the Philadelphia Gas Company. The reader will very naturally ask—what have politics to do with gas-making? The reply to this interrogation would be, in most instances, nothing whatever; but in the case in question a very different answer must be returned. In cities where the gas-works are under municipal control, the individuals who aspire to positions of importance must, as a primary recommendation, have political proclivities in accordance with those of the ruling party; and the followers of the dominant faction are the only ones who have any chance of appointment; the great requisite for office being, not whether the applicant is fitted by education for the place to which he aspires, but whether he is sound in his political creed, and can prove his record to have been in consonance with party requirements. Hence, in gas-works under municipal control we often see the singular spectacle of political presidents, democratic directors, cleemosynary engineers, servile superintendents, wire-pulling workmen, and caucus-attending clerks, all grouped together in one happy family, which BARNUM himself would confess far more curious than anything in his crowded collection.

The Philadelphia Gas Company—a municipal concern—have had fewer changes of a political nature than usually fall to the lot of such establishments. Fortunately, this Company have been most favored in the choice of their engineers—and since the inauguration of their works in 1835 but two chief engineers have been in their employ—SAMUEL V. MERRICK, Esq., under whose superintendence the works were built, and Professor JOHN C. CRESSON, the present accomplished incumbent, whose appointment was made as long ago as August, 1836. It is hardly necessary to add that these appointments were *not* of a political character. The sound practical common-sense, scientific attainments, and prominent social position of these gentlemen making them widely known not only in their own city but elsewhere.

In the recent political changes in the Philadelphia gas-works, we are pleased to see that the revolution was not so radical as it might have been, and that a few of the officers whose removal would have been a positive loss to the Company have been retained. It is especially gratifying to notice the names of Prof. CRESSON and Dr. C. M. CRESSON still retained, as well as JOHN P. MURTA, Esq., the Registrar, and and WILLIAM FENNELL, Esq., the Cashier. The acerbity of party feeling must have run high indeed to place these gentlemen in retirement, and we accept it as an indication that however political rancour may overlook other considerations, it is not always blind to personal qualifications.

But other changes have been made which we regret to see. Some of the new appointees are mere politicians, hungry and anxious to devour the spoils of victory, and having about the same appreciation of the science and art involved in making gas, as have the vultures and wolves hovering around a battle-field, of the chivalrous fire that nerves the arms of the combatants. But what else can be expected in gas-works controlled by municipal authorities, where the trustees are elected—for what? Not because of fitness for the position; not for scientific attainments; not for business qualifications; but because they belong to a party, and being thus elevated to some little influence, they have the power of doling out here a sop to some hungry office seeker, and there a crumb of comfort to some intriguing pot-house politician.

The city councils of New York have a strong desire to obtain control of the gas-works here, and the daily press is inconsiderate enough to urge the question and press it on the attention of the people. We hope no such folly will prevail. If the results are bad in Philadelphia, they would be a hundred-fold worse in this city, where everything is on so much larger a scale. We have before alluded to the rich jobs the virtuous city fathers of New York would find in the management of the gas-works. The mere suggestion of the consequence of such an event is enough to cause one to recoil with expressions of offended sensibility. However, we believe the gas companies are fully protected in their legal right to retain their charters, and we hope they will not be thwarted by any aspiring demagogues. In their fair-dealing, legimate business we are their firm ally and friend, and shall endeavor to protect them from all encroachments on their vested rights.

SULPHUR IN COAL GAS.

Consumers of coal gas in this country, and in this city in particular, may congratulate themselves on the quality of the gas they burn, when compared with that distributed by the London companies to their consumers. Not only is London gas much inferior to New York gas in illuminating power, but its quality in a chemical point of view is execrably bad. In another part of this JOURNAL will be found an abstract of Dr. LETHEBY'S quarterly report to the Commissioners of Sewers of London, on the quality of the gas supplied by three well-known companies of that city. It will be seen that the illuminating power of this London gas is very low, that of the three companies averaging only 13.15 candles. In this city the gas made by the New York, Manhattan, and Harlem companies will average the year round fully 16 candles, and it is often much higher than that.

In Dr. LETHEBY'S report we are informed that the chemical quality of the gas is so bad, that in several instances more than twenty grains of sulphur have been detected in 100 cubic feet. This is a very large quantity, and we cannot wonder that there are persons in London who still object to using gas for fear of damage being done to decorations and other articles which can be easily soiled. On page 137 of our second volume will be found an account of some experiments of Dr. TORREY on gas made by the Manhattan Company, in which but 2.03 grains of sulphur were found in 100 cubic feet, or *one-tenth* of the amount found by Dr. LETHEBY in the gas distributed by the three London companies named in his report.

Now, what is the inference from this? When we burn gas of several candles higher illuminating power than London gas, and containing only one-tenth of the most objectionable impurity which London gas contains, and when we remember that our city gas companies to a great extent use English coal, does it not prove, either that our gas engineers are better versed in the details of their profession, and are thus superior to their English brethren, or that our companies are more liberal in trying to deliver their gas to consumers as pure as it can be made? Some conclusion must be drawn: what shall it be? In this instance our amiable friend JOHN BULL has decidedly the worst of it.

MESSRS. S. FULTON & CO., OF PHILADELPHIA.—In the Report of the Croton Aqueduct Board, published in another part of this number, a deserved compliment is paid to the house of Colwell & Co., of Philadelphia. This firm have been succeeded by Messrs. S. Fulton & Co., who were partners in the old house. The work constructed by Messrs. Fulton & Co. is well known throughout the country, and the encomium passed upon them by the Croton Board is fully deserved, as is attested by their large and increasing business.

AN OLD WATER-GAS PROCESS REVIVED.—The Commissioner of the English Patent Office, must be often amused at some of the applications for patents coming under his notice. An individual has recently patented a process for making water-gas by forming hydrogen from zinc and sulphuric acids, and then passing the gas through naphtha. It would puzzle the most learned expert to detect any novelty in this "invention."

ANSWERS TO CORRESPONDENTS.

S. T. C., of Me.—*We cannot answer your question, as we are entirely unacquainted with the merits of the case. The party you name is the proper one to whom to apply for information.*

J. C. C., of Ind.—*The works have been altered to coal gas-works, as we mentioned in our number for January 15. We believe Mr. Severin is in England.*

J. W. F. of, Ky.—*The book is out of print, but a new edition will shortly be issued by the same publishers.*

E. B. D. of, Pa.—*The coal you allude to is of an excellent quality for steam and blacksmith's use, but contains hardly enough bituminous matter to render it available for gas-making, much less for oil.*

E. S. L., of Mass.—*We believe the works are still in operation, although we cannot speak positively on this point. We have not heard from the company for some time, although their name is still on our subscription book.*

J. F. of N. Y.—*It was organized in 1853. The capital is $30,000 in shares of $25 each. We believe the company are doing a safe and sound business.*

CORRESPONDENCE.

HISTORY OF THE ST. LOUIS, MO., GAS-LIGHT COMPANY.

St. Louis, Mo., March 11, 1863.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

Some time since, I promised you a brief history of the St. Louis Gas Light Company. Subsequently you reminded me that my promise was yet unfulfilled. Believing, therefore, that it is better late than never, in this, as in things generally, I now give you the promised sketch.

On the 11th of February, 1839, an act was approved by the Legislature of the State of Missouri, incorporating the St. Louis Gas-Light Co. The incorporators named were: M. L. Clark, S. W. Wilson, J. H. Caldwell, and John D. Daggett. The capital was $100,000, with the privilege of an increase to $600,000. The charter was a very liberal one; and, among other privileges, gave the Company the right to do a banking business.

The city of St. Louis, which at that time contained about 15,000 inhabitants, did not seem, at first, to desire gas-light; or, rather, its citizens were loth to become stockholders in a gas company, having doubts, probably, about its being a "paying" concern.

However, some had the temerity to take stock; and 2,000 shares, of $100 each, were ere long sold by the Company. The building of a works was soon commenced, but the progress was slow. In the mean time, the Company availed itself of the banking privilege, and was engaged in receiving money on deposit, loaning money, and in other money transactions.

In 1842, owing chiefly to the derangement in the monetary affairs of the country, the Company was compelled to discontinue its banking operations, and, at the same time, to suspend the construction of the works.

On the 28th February, 1845, the charter of the Company was amended, reducing the capital stock to $40,000, and placing the shares at $50 each.

The Company, thus taking a new start, as it were, turned its attention exclusively to supplying the citizens of St. Louis with gas-light; and a contract was entered into with Mr. George F. Lee, of Philadelphia, to construct a works. He went energetically to work, and put the works into operation November 4th, 1847.

On the night of November 4th, 1848, the first public gas-lamps—80 in number—were lighted; and on the 10th of December following, 250 lamps shed their light upon the citizens' pathway.

The Station Works, at the commencement, consisted of a retort house, containing 7 benches of 3 retorts each; a purifying house; a station meter; a hydraulic governor; two gas-holders, one 49 and the other 50 feet diameter, with a storage capacity of 80,000 cubic feet of gas; together with condensers and all the necessary pipes, &c., for distributing the gas.

The works proved to be too small, in a very short time; for in their Second Annual Report the Directors say: "During the past year, the works have been barely sufficient to manufacture enough gas to supply the demand," &c. The consumers, at this time, numbered 789—an increase of 330 during the second year.

By the great fire of 17th May, 1849, which deci-

mated the city, the Company sustained considerable loss, in the destruction of a large number of its meters, with service and connection pipes, &c.; from the disuse of gas by a great many consumers whose places of business were burnt down; and by the escape of gas from fractured pipes.

During its third year, the Company enlarged its works, by adding retorts, purifiers, condensers, &c., and also a gas-holder capable of containing 270,000 cubic feet of gas. And the capital stock was increased the following year to $400,000.

In 1854, the Company experienced a great misfortune in its inability to obtain Pittsburg coal. The contractors who had been supplying coal failed in business that year, and the water of the Ohio river was too low to admit of any coal being brought from that place. The Company was, therefore, compelled to use a large proportion of Missouri and Illinois coals. These yielded a very inferior gas, which gave the community great dissatisfaction. Complaints of the poor quality of the gas were loud and deep; but the Company was not in the least at fault, the evil being beyond its power of remedy at the time.

The rapid growth of St. Louis soon demanded still further enlargements of the Company's works; and in 1857 more retorts were added, together with all the necessary extensions and additions, for the manufacture, purifying, &c., of a greatly increased quantity of gas. Yet another gas-holder, of the telescope pattern, was constructed, capable of holding 1,000,000 cubic feet of gas, making the combined storage capacity of all the holders nearly 1,500,000 cubic feet. This last holder was manufactured by Messrs. J. W. & J. F. Starr, Camden, N. J. It is an excellent piece of work, and operates with great precision.

In 1858, the Company introduced into their works the exhauster, and also commenced the use of the clay retort. So great was the satisfaction given by the clay retort, that in a little over a twelvemonth all the iron retorts had been replaced by those of clay.

Since the difficulty in obtaining Pittsburg coal, in 1854, already referred to, the Company has had an ample supply at all times; in fact, has had a large quantity on hand nearly the whole of that period. The contractor, Mr. James O'Connor, of Pittsburg, has worked with energy, and always been "on time" in his annual deliveries of coal.

The St. Louis Gas-Light Company has now 5,000 consumers, 1,703 public or street lamps, and nearly 54 miles of street main pipe laid. The population of the district furnished with gas is about 100,000 souls; the present population of the whole city being 180,000.

The Company's affairs are managed by a Board of nine Directors, who hold regular monthly meetings, to which are presented the several monthly reports of the Engineer, Inspector, and Superintendent of Public Lamps. The Secretary is also required to exhibit a monthly balance-sheet.

The capital stock of the Company is now $600,000, the prescribed limit by charter, divided into 12,000 shares of $50 each. E. S.

ACETYLENE.—Berthelot, the French chemist, has found that when graphite is intensely heated by means of the galvanic current in an atmosphere of hydrogen, acetylene is formed in considerable quantity. The same result is obtained with gas-carbon and with purified wood-charcoal, though, in this last case, with much greater difficulty, perhaps in consequence of the difficulty of heating the very porous mass to the requisite high temperature. Carbon does not combine with chlorine, bromine, or iodine, under the circumstances in which acetylene is formed; nor can pure carbon be made to combine with pure nitrogen. The spark of Ruhmkorff's apparatus gives no acetylene with pure carbon and hydrogen.

PATENTS.

UNITED STATES.

37,798.—J. L. Alberger, Buffalo, N. Y., for an Apparatus for Distilling Coal Oils:

I claim the employment, simultaneously, within an oil-distilling retort, of a steam-supplying and a steam-heating system of pipes, substantially in the manner and for the purpose herein shown and described.

37,811.—Timothy Drake, Windsor, Conn., for Vapor Lamps:

I claim the combination of the heaters, m n, chamber, k, diaphragm, h, and vaporizing chamber, a, substantially in the manner as and for the purpose described.

Second, I claim the heaters, m n, with the interior perforated diaphragm, h, substantially in the manner and for the purpose described.

37,815.—J. C. G. Howitz, Copenhagen, Denmark, for a Composition for Purifying Gas:

I claim the employment or use of the within described composition of iron ore and spent tan or sawdust mixed together in about the proportion herein specified for the purpose of purifying coal gas substantially in the manner set forth.

27,820.—John McClelland, Washington, D. C., for a Hydrant:

I claim the sliding valve, C, with its slotted arm, F, and the crank or eccentric, D, with the cap or cover of a hydrant or fire-plug, in the manner herein described for the purposes set forth.

37,826.—Andrew J. Reynolds, Dayton, Ohio, for a Pump:

I claim, first, The hollow piston, D D' E F f, containing the double acting disk valve, C", within the said piston; the whole being constructed and operating in connection with a double-acting pump cylinder or its equivalent; substantially as set forth.

Second, I claim the arrangement of bolts, N N', serving the two fold purpose of pivots and set screws, the collar, O, bell crank, K L M M, and pedestal, H I I, the whole being combined with and serving to operate a water-discharging piston rod, D', in the manner set forth.

37,828.—William S. Sampson, New York City, for a Conduit Pipe:

I claim forming tubes or cylinders for water pipes, cisterns, &c., of tongued and grooved (or otherwise equivalent-shaped) bricks and iron bond-plates and tie rods, in combination with a composition or cement lining covering the iron work, substantially as and for the purposes herein before set forth.

37,832.—John J. Squire, New Haven, Conn., for a Register for Gas and Water Meters:

I claim the above-described arrangement of the cans, levers and shields when applied to gas or water meters as and for the purpose herein set forth.

37,833.—John Temple, Wm. M. Mills & Atlas L. Stout, Middletown, Ohio, for a Water Wheel:

We claim the combination of the curved or concave top flange or rim, A, with the inclined straight flange or rim, B, constructed and operating in the manner and for the purposes substantially as described.

Also we claim the combination of the flanges or rims, A B, constructed as set forth with cyma-reversa or scroll buckets, c, in the manner and substatially as specified.

37,837.—W. Powell Ware, New York City, for a Mica Lamp Chimney:

I claim a mica lamp chimney formed of a frame constructed in such a manner as to admit of the insertion of flat slabs or planes of mica, substantially as herein set forth.

37,845.—W. H. Smith, New York City, for a Perforation in Lamp Burners:

I claim a raised perforation, as shown at c, in Fig. 2 and Fig. 3, when used in coal oil and other burners, the whole being arranged substantially as and for the herein-described purposes.

37,848.—Friedrik Becker, Scranton, Pa., for a Composition for lining Oil Barrels, &c.:

I claim the application of the above-mentioned composition, to prevent barrels, boxes, &c., from leaking, even kerosene oil barrels.

37,867.—Carl A. Kleeman, Erfurt, Prussia, for a Lamp:

I claim the notch, l, in the cylinder, f, for the purposes and as specified

I claim the interior air-tube, k, of the burner formed of thin sheet metal, with the screw thread made by bending said sheet metal, as specified.

I also claim the arrangement of the wick tube, o, cylinder, p, and cup, 3, at the upper end of said cylinder, p, to return any overflow of oil to the inside of the cylinder, h, as specified.

37,868.—C. W. T. Krausch, Chicago, Ill., for a Lamp and Lantern Burner:

I claim heating and supplying air to the flame of a lamp or lantern in a space included within a spiral coil, substantially as and for the purpose described.

37,877.—W. A. Shaw, New York City, for Lining Lead Pipes with Tin:

I claim the manufacture of lead pipe with a lining of tin by forcing an ingot of tin and an ingot of lead, while over a core, out of a cylinder through a die by hydraulic pressure, as specified.

37,887.—John J. Miller (assignor to himself and Ernst Prussing), Chicago, Ill., for a Lamp:

I claim the combination of the perforated supporting cone, G', with the perforated conical deflected, G, the latter converging upward in straight lines at an angle of 45°, or thereabout, with the perpendicular, and this I claim either with or without the coronal flange, H, and the spring clasp or socket, F, by which the cap may be adjusted vertically upon the wick tube.

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T. FARLEY,
IRA A. ALLEN,
G. A. JEREMIAH,
Committee on Sewers

OFFICE OF THE CITIZENS' GAS-LIGHT COMPANY OF BROOKLYN, No. 1 POST-OFFICE BUILDING, MONTAGUE ST., BROOKLYN, Dec. 29, 1862.—THIRD DIVIDEND.—A dividend of THREE PER CENT. on the capital stock of this Company has been declared, payable on and after the 15th of January. The Transfer Books will be closed from the 1st to the 15th of January inclusive. By order,

H. WARREN, Secretary.

OFFICE WILLIAMSBURGH GAS-Light Company, Brooklyn, N. Y., January 12th, 1863.—DIVIDEND.—The Board of Directors have this day declared a semi-annual DIVIDEND of FIVE PER CENT., payable on and after Monday next, January 19th.

The Transfer books will remain closed until the 20th. C. F. BLODGET, Secretary.

JERSEY CITY WATER LOAN Bonds.—Notice is hereby given that the Interest Coupons, due January 1, 1863, of the Jersey City Water Loan Bonds, will be paid upon presentation at the Ocean Bank, New York city, and the Bank of Jersey City, Jersey City, N. J.

G. S. BOICE, Registrar.
OFFICE OF THE WATER COMMISSIONERS, Jersey City, Dec. 20, 1862.

A CIVIL ENGINEER, FOR TWO years engaged in a first class Gas-Works, is desirous of obtaining charge of some country works. Salary not the object. Reference given. Address GAS ENGINEER, Post Office, Bordentown, N. J.

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Herring's New Patent Burglar-Proof Safes, made of a combination of Wrought Iron, Patent Crystalized Iron, and Bars of Steel, are confidently offered to the public as the strongest and best security against skilful burglars now extant.

It was a "Herring's Burglar-Proof Safe," the public will remember, which so lately held secure its trust against the determined ingenuity of the boldest and greatest mechanical burglars this country has ever known, and saved for the New York Exchange Bank no less than

HALF A MILLION OF DOLLARS.

Herring's Patent Fire and Burglar-Proof Safes *combined*, (one Safe within another,) making the most perfect protection from fire and thieves now known.

FIVE OF HERRING'S SAFES VICTORIOUS!

WELLSBORO', Penn., December 21, 1861.

Messrs. Herring & Co., New York:

Gentlemen,—At the great fire which occurred here on the 18th December last, my store, with a number of other buildings, was entirely destroyed; no less than seven places of business were burnt out and five of your safes severely tested, in every instance saving their entire contents, to the complete and perfect satisfaction of the owners. Two of your Herring's Patent Champion Safes which were in my building remained there through the entire conflagration, and were not opened until the day after the fire. No water was thrown on the building. Everything in my safe after the fire was nearly as good as new. C. L. Wilcox also preserved all his books, papers, and money in two of your safes, both being in same fire. Wm. Roberts was also the fortunate owner of another of your Patent Champion Safes, which was severely tested, and saved completely his books, papers, and money. The result has given great satisfaction, and we want no safe but Herring's Champion. Please send me one same size I last bought of you immediately. Send by N. Y. & Erie R.R. via Tioga depot. JOHN R. BOWEN.

I had two of Herring's Safes in above fire. They saved my books, papers, and $2,000 *in bank bills*. C. L. WILCOX.

HERRING'S PATENT CHAMPION saved my books, papers, and about $400 in *paper money*. I would use no other. WILLIAM ROBERTS.

GREAT FIRE IN PEARL AND FULTON STS.

NEW YORK, Jan. 27, 1862.

Messrs. HERRING & Co., No. 251 Broadway:

Gentlemen,—The large HERRING'S PATENT CHAMPION SAFE you made for me a few years ago has been put to a severe test in the great fire corner Fulton and Pearl sts., on the 26th inst., which entirely destroyed my building, together with many others.

The fire commenced about 6 o'clock on Sunday morning, and the safe was taken from the ruins after an exposure of more than thirty hours.

Your Safe contained all my books, insurance policies, and other valuable papers besides, gold and silver, bank bills, coupon bonds, &c., amounting to over Two Hundred Thousand Dollars. Everything in the Safe is in perfect order, except the binding of the books being steamed.

Your Patent Champion Safe gives us great satisfaction, and has guarded safely through the fire every dollar of its contents.

Truly yours, A. S. FOSTER.

GREAT FIRE IN NEW JERSEY.

NEW BRUNSWICK, N. J., January 18th, 1862.

Messrs. HERRING & Co.,
No. 251 Broadway, New York:

Gentlemen,—At the recent extensive fire in our city, on Wednesday morning last, 15th inst., I was the fortunate owner of one of your HERRING'S PATENT CHAMPION SAFES, which contained some books and a number of valuable papers.

The heat in my store was very great, and the safe subject to an intense heat. I felt great interest in the safety of my papers, as a number of castings in my store and within a few feet of the safe were melted. Nothing, indeed, was saved in my building, except the contents of your safe, which I am happy to inform you was completely preserved, after a thorough roasting for some seventeen hours. The result has exceeded my anticipations, and fully confirmed my confidence in the security of your Herring's Patent Safe. Please send me another of larger size, and refer all incredulous to my books and papers, which it gives me great pleasure to show.

WM. H. ARMSTRONG.

Herring & Co., 251 Broadway.
Farrel, Herring & Co., Phila.
Herring & Co., Chicago.

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PASCAL IRON WORKS,
[ESTABLISHED 1821.]
PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

STEPHEN MORRIS,
THOMAS S. TASKER,
CHAS. WHEELER,
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R. A. BRICK, Manufacturer of CAST IRON WATER and GAS-PIPES. RETORTS, PIPES, &c., always on hand. Office, 109 Leonard Street, New York.

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FLORENCE IRON WORKS.—The subscriber is prepared to execute orders and make contracts for Cast-Iron Water and Gas-Pipes, from 2 inches to 48 inches in diameter; also, Retorts, Bench-Castings, Branches, Bends, and all Castings for Water or Gas-Works. Pipes and Castings coated with Smith's Patent Coal Tar Varnish to prevent corrosion.

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FOR STEAM OR HIGH-PRESSURE WATER AND GAS; HIGH-PRESSURE STEAM AND WATER VALVES,

FIRE & GARDEN ENGINE WORK, PUMPS, HYDRANTS, WATER-CLOSETS,

Iron and Brass Gas-Fittings, Gaseliers, &c.

AND OF THE GROVE BEDSTEAD WORKS, WALSALL.
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Catalogues post free.

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And all other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

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MANUFACTURERS OF
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MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Line Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.

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THE GROVER & BAKER SEWING MACHINE, everywhere triumphant. This Machine has taken the First Premium at the State Fairs last held in

New York,	Missouri,
New Jersey,	Kentucky,
Ohio,	Tennessee,
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Including every State Fair at which it has been exhibited in 1862.

The Work made on the Grover & Baker Machine has taken the First Premium at every Fair in the United States where it has been exhibited to this date. GROVER & BAKER S. M. CO.,
495 Broadway, N. Y.

GAS & WATER-METERS.

R. H. GRATZ & CO.,
PHILADELPHIA METER WORKS,
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First block above City Gas-Works,
PHILADELPHIA,
Manufacturers of
STATION METERS,
WET & DRY CONSUMERS' METERS,
EXPERIMENTAL METERS,
GLAZED METERS,
PRESSURE REGISTERS,
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MINUTE CLOCKS,
WATCHMEN'S CLOCKS, &c., &c., &c.

R. H. GRATZ. WM. C. STILES, Jr.

JOSEPH LENNIG,
1615, 1617, and 1619 Francis St.,
Above Ridge Avenue, Philadelphia, Pa.,
MANUFACTURER OF
WET & DRY GAS METERS,
STATION, SHOW, & EXPERIMENTAL METERS,
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GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
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Continue to Manufacture at the Old Stand
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GAS METERS (Wet and Dry),
STATION METERS,
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and *all* other articles in their line as heretofore.

H. R. WORTHINGTON'S
PATENT WATER-METER.

This Meter combines
ACCURACY,
SIMPLICITY, and
REMARKABLE DURABILITY,
with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

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CONICALLY SLOTTED SOLID Wood Trays for Gas-Purifiers.—Admitted to be the best, cheapest, and most durable selves for gas-purifiers ever used.

Secured by Letters Patent of the United States, both for the machinery used in the manufacture, and for the selve itself.

For sale on reasonable terms to Gas-Light Companies or Agents, on application, by letter, to the patentee, RICHARD G. HUNT,
631 Fourth st., near Avenue C,
New York City.

N. B.—All persons are warned against purchasing these selves of others who falsely pretend to have patents for them. Suits will be commenced immediately against all persons infringing my patents by using or making wooden sieves, but those who hereafter purchase from me can buy their selves cheap and will not be troubled by me on account of former purchases. R. G. H.

PATENT
Conically Slotted Solid Wood Sieves
FOR GAS PURIFIERS.
CAUTION
TO
GAS MANUFACTURERS.

The Conically Slotted Solid Wood Tray was patented 21st October, 1862, by N. O. Hawxhurst, assignee of Wm. Combe, and all persons are cautioned against purchasing such trays of R. G. Hunt, or any other person except the subscriber, as it is a direct infringment of said patent. The following companies are now using my trays.

Manhattan, New York,
Williamsburgh,
Brooklyn,
Albany,
Baltimore,
Philadelphia,
Chicago,
Louisville,
And numerous others.

Orders received by mail or otherwise.
JOHN L. CHEESMAN,
147 Ave. C, New York City.

THE TWO GREAT PATENTS OF THE DAY.

1.—Improved Mode of Setting Gas-Meters in the Walls of Buildings.
2.—Cast-Iron Mail-Stations for Public Lamp-Posts.

Adopted by the UNITED STATES GOVERNMENT for the Principal Cities.

ALBERT POTTS, Philadelphia, Patentee.

By the FIRST IMPROVEMENT the Meters may be inspected at any time from without, by the agents of the Gas-Company having keys for that purpose. Thus burglars need no longer gain admittance to dwellings under pretense of examining the meters, while they, in fact, examine the fastenings. The meter-box, being neatly and securely imbedded in the front wall, the meter is protected against frost by means of a thick pad on the back of the door. It has been satisfactorily tested in long continued severe weather and found to be eminently successful.

The SECOND IMPROVEMENT speaks for itself. The cities of New-York and Philadelphia are already supplied with these boxes, and the convenience to the citizens and increase of revenue to the Post-Office Department are most marked. Always in sight, securely fastened to the most public objects, protected by light, day and night, they have become the most popular of all modern improvements and will be immediately adopted throughout the country.

Both of these improvements are to be seen at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, New-York City. For further information address the Proprietor of this JOURNAL, who is authorised to contract for the use of both Improvements, or

ALBERT POTTS, Philadelphia.

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Secured to Heirs of Deceased Army and Navy Officers and Men. Accounts of Resigned and Deceased Army and Navy Officers adjusted and cashed.

APPROVED CLAIMS

AGAINST ALL THE DEPARTMENTS, PURCHASED OR COLLECTED.

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CAVALRY REGIMENTS.

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JOHN B. MURRAY,

ARMY AND NAVY BANKER,

No. 39 Nassau Street, New York, opposite the Post-office.

PATENT BITUMINIZED PIPES,

For the Conveyance of Water, Gas, and Drainage.

This important invention, patented by Mr. Charles Newbold, and now for the first time introduced to the public, may confidently be stated to be one of the greatest interest and commercial value, as the Patent Bituminized Pipes possess all the qualities necessary for the conveyance of Water, Gas, Sewage, Mine-Pumps, &c., viz.: great strength, great durability, and inoxidability, with the immense advantage of being about *one-fifth* the weight of iron pipes, and about 35 per cent. cheaper; whilst, compared with lead pipes, the Bituminized Pipes are only about *one-fourth* their price, without the possibility of the formation of the the oxide and carbonate of lead, so dangerous for every purpose. They will stand 150 degrees of Heat, and after many trials it has been satisfactorily proved that rats or vermin will not touch them. They also withstand the action of all acids and salts.

Iron pipes are at present frequently covered with a coating of bitumen or coal tar before they are laid down; but the adherence of this coating to the metal being very imperfect, on account of vibration and the difference of expansion, this preservation is insufficient, besides being exposed to a number of influences which neutralize its efficacy—galvanic currents materially assist the formation of oxides and deposits, which cause the obstruction and eventually the destruction of metallic pipes.

The Patent Bituminized Pipes are neutral, non-conductors of electricity, and consequently are not exposed to any of the deteriorating influences mentioned above. The process of manufacture of these Pipes consists in causing a roll of paper to pass through a reservoir of melted bitumen, after which it is tightly coiled around a mandril to any required thickness; and thus, when hardened, a tube is formed of perfect texture, great hardness, and enormous strength. These Pipes are proved, by hydraulic pressure, to resist a pressure of 220 lbs. to the square inch, equal to 506 feet head of water, which is more than double the altitude of the highest reservoir. The bituminous composition which unites and covers these Pipes, is so well known as an excellent preservative, that it will be unnecessary to demonstrate that, when laid underground, the durability of the Patent Bituminized Pipes may be considered as unlimited. The Pipes are made in lengths of seven feet, and are connected by socket joints of the same material as the Pipes; or they can be fitted with iron flanged sockets, screwed together in a most simple and inexpensive manner.

For Gas these Pipes are invaluable; the Gas-lining which we insert, effectually resists the action of Gas, and being non-conductors, there can be no dondensation in them, and the joints made with the Patent Cement are so strong as to entirely prevent Leakage.

The cost of laying the Pipe is also small, compared with those of iron, and can be done by mere laborers. The Bituminized Pipes have been in use the last hree years, for the conveyance of gas, and have been ascertained to be as perfect now as when first laid down.

DIRECTIONS FOR JOINING THE PATENT BITUMINIZED PIPES.

Pack the pipes level in the ordinary way; slip the collar over one of the pipes; draw the ends close together and warm them by putting a hot iron between them; then press them together so as to make them adhere; take a piece of iron wire netting, about half an inch in the mesh, a little narrower than the length of the collar, and long enough to wrap once round the pipe, spread the collar over it and the joining; close the ends with clay; pour the melted cement into the manhole of the collar, and fill up the interior space; then remove the clay and the joint is finished.

It is necessary to leave a small vent-hole in the clay at each end of the collar to allow the air to escape as the cement is poured in, that there may be no flaws or air-bubles in it when cold. If in cooling the cement settles in the manhole, fill up again.

N. B.—The cement should be broken into small pieces and melted in a pot as you do lead, at a low temperature, until it is dissolved; it must be stirred while melting; then take it off and keep stirring it as it cools until it becomes nearly as liquid as water; then pour quickly.

All Orders should be addressed to

THE AMERICAN BITUMINIZED PIPE COMPANY,

OFFICE 24 WATER STREET, BOSTON, MASS.,

J. McGEARY, AGENT;

or to FREDERICK W. BOND,

SOLE AGENT FOR NEW YORK,

58 LIBERTY STREET, (between Broadway and Nassau Streets,) **NEW YORK.**

Cement for Joining, For Sale as above.

POTTS' REVOLVING SIGNAL LIGHTS,

PATENTED SEPTEMBER 8, 1857.

Mr. ALBERT POTTS, the well known Inventor of the LAMP-POST LETTER-BOXES, which have been adopted by the Post-Office Department for the large cities of the United States—and also of the GAS METER BOX, to be set in the front walls of houses, thus doing away with visits from Gas Inspectors, or burglars in gas-clothing, has lately brought forward a third Invention, which, in point of importance and world-wide usefulness, surpasses the others entirely.

These SIGNAL LIGHTS are intended for use on Vessels propelled by Steam, and those exclusively. They specially indicate the presence of a Steamer, and by their use there will be less likelihood of mistakes, and consequent collision, than at present. They are also intended for SIGNALLING AT NIGHT, and can be used for that purpose UNDER ANY CODE of SIGNALS NOW ARRANGED FOR FLAGS.

This Improvement in Lights for Steam Vessels consists in having the Lanterns containing the colored lights connected by means of a series of cogged gearing with some convenient part of the Engine or Machinery, so as to cause them to have a revolving motion around their axis. On side-wheel steamers, the Lanterns should be placed directly over the wheel-houses, and the power, or motion to turn them, may then be very conveniently obtained from the paddle-wheel shaft. On Propellers, the Lanterns should be placed on each side of the Pilot House, or hurricane deck, and the rotary motion derived from any convenient or suitable part of the Engine or Propeller shaft. Each Lantern is supported on the end of movable cranes, so that their relative positions may be changed and properly adjusted to suit the view of observers on either side of the vessel at the time of signalling.

The Lanterns to be used in this improvement may be constructed for Burning Oils, Fluids, Gas, or any of the known modes of illumination, and should be furnished with one or more lenses and reflectors, so as to concentrate the rays of light, and project them over the horizon with the greatest intensity. The lenses for this purpose should be made with colored glass, viz., Red and Green, and the position of the respective Lanterns, according to the color of the lenses therein, must be placed on the sides of the vessel so as to answer to the requirements of Rules and Regulations made and published by the Supervising Inspectors of Steamboats, agreeably to the Act of Congress of the United States in such cases made and provided. That is to say—by said Regulation—the Lantern having the green lenses for producing the Green Colored Light, must be placed on the starboard side of the vessel, and the other Lantern producing the Red Light, to be placed on the port side thereof. In pursuance, also, of the aforesaid Rules and Regulations, there is to be found in board and behind each Lantern, a screen to answer the purposes therein mentioned.

The cogged gearing, by which the Lanterns are connected with the Engine or paddle-wheel shaft, and thereby caused to revolve when the Engine is in motion, is so arranged that the connection may be readily shipped or unshipped, and the Lanterns made stationary or otherwise, at the pleasure of the Pilot, or those whose duty it may be to operate and attend to the same. The cranes on which the Lanterns are placed are also rigged so as to be readily turned horizontally from one position to another, so as to present one or both lights to the view of observers when laying athwart ships at the time of signalling.

On the Use and Application of the Improvement for Night Signals.

When the vessel is under weigh, or going ahead in its course, the Lanterns are to be placed directly athwart ships, so that such colored light therein will then have the position and place prescribed by Rule Seventh of the aforesaid Supervising Inspectors of Steam Boats, and with the screens behind them, as above described, will then answer all the intents and purposes for which the colored lights are thus required to be used, as illustrated in the several diagrams published by said Inspectors for the working of a system of Colored Lights. The Lights in this case, according to the color seen by the observer, indicate the course or direction of the vessel whereon they are carried. When the Lanterns with the colored lights therein, are made to revolve around on their axis, as proposed in this improvement, in addition to the signal above, another, and as we believe, very important and useful signal is thus formed, indicating that the vessel, whereon it is carried is a Steamer. In dark foggy nights, it is found by experience, to be somewhat of a difficult task to distinguish sailing vessels from Steamers and Propellers, especially when the latter are rigged, and carry a press of sail. When Steamers meet "head and head," it is the duty of each to pass to the right, or, on the larboard side of the other. Whereas, when a Steamer meets a sailing vessel, the former must give way and allow the latter to pursue its course. Hence, to carry out the regulations of the said Steamboat Inspectors, and prevent collisions, it is important to have some infallible sign, whereby the character of the vessel may be readily seen and determined. Several very fatal collisions have recently taken place through mistakes of this kind.

On Signals for Speed and Distance.

The gearing of the Lanterns with the paddle wheel or propeller shaft, may be so arranged as to be an index of their speed. A very good proportion, would probably be to make the Laterns turn about one third as fast as said shaft. Hence, when the speed of the vessel is previously known, when making a certain number of revolutions of the paddle or propeller, it becomes an easy task from observing the time with which the Lanterns thereon may be turning to approximate to the speed with which the said vessel is moving at the time of observation. Again, as the arcs described by the rays of light from each lantern, as they revolve around on their axis, is greater in proportion to the distance from said lantern, so will the time in which said rays move over any given space, be less in the same proportion. Hence, when the lights are very remote, or far off, from the observer, the duration of each column or cylinder, of rays from each lense, would pass the eye of the observer, in a short space of time, or with great velocity. Whereas, at a nearer point of observation, the time of its passage would be considerably lengthened, or the motion thereof apparently much slower. From these facts, we believe the improvement is susceptible of indicating, in an approximate manner, the speed and distance of vessels whereon the revolving lights may be used.

On the Application of the Improvement for Marine Telegraphic Purposes.

The Revolving Lights can be readily applied to the general purposes of Marine Signalling at night, as follows: In order to show this application, we have adopted the Numbers as given in Roger's Code of Marine Day Signals, believing that work to be somewhat of a standard in matters of this kind. Instead of the flags used in the above code, for day signals, to indicate the combinations of two or more letters of the Alphabet, which combination is referable to certain numbers indicative of the words or sentences telegraphed, we propose to perform the same operation, at night, by means of the two revolving colored lights, so as to indicate the numbers directly to which the intended words or sentences to be telegraphed are referable. Thus, whether the vessel to be signalled is ahead, astern, or abaft the beam, the position of the two colored lights must be so adjusted, by means of the moveable cranes, whereon said lanterns or lights are fixed, that the two lights may be fully made visible to the observer. When both lights are thrown into this position, stopping the motion of the lanterns may be the signal for calling attention, or a rocket fired off, or the steam whistle blown, would answer the same purpose. Now, in order to represent the ten numerals, we propose to indicate them by the respective motions of the two colored lights, as follows:

RED LIGHT.				GREEN LIGHT.			
One Red, Represents Number			1.	Two Green, Represents Number			2.
Three	do.	do.	3.	Four	do.	do.	4.
Five	do.	do.	5.	Six	do.	do.	6.
Seven	do.	do.	7.	Eight	do.	do.	8.
Nine	do.	do.	9.	One	do.	do.	0.

In the above arrangement, it will be seen that all the odd numbers are made by the Red Light, and the even numbers by the Green Light. In order to indicate the repeat of the last number, once or more times, or for other special purposes, which may hereafter be found useful and necessary, an even number of lights may be shown by the Red, and an odd number by the Green. It will be understood that when the Lanterns are made with three lenses in them, the numerals as above arranged are formed by the number of times a new light or lense is presented to the observer. Thus to indicate the number 3, the Red Light or Lantern would make one entire revolution; and to make the number 6, the Lantern carrying the Green Light would make two revolutions, and so on with the other numbers. When a symbol is made, the motion of the Lantern is to be suspended for a short time, and when a number expressing a sentence is formed, the lantern may be stopped for a longer period, or some one of the special signals above referred to, may be used for this purpose.

To show the application of this improvement as above mentioned, whereby these Lights can be used as readily for Night Signals, as Flags are used for Day Signals by the author of Roger's Code, we shall use the sign O, colored red or green, according to the light used, to show the number of movements performed by the respective lights in order to represent any desired number of said code, suitable for the required purpose.

RED LIGHT.	GREEN LIGHT.
O, O, O, O, O,	
O, O, O, O, O, O, O.	
	O, O.
	O, O.

The above would represent the number 5722, and by reference to said Roger's Code, would be found to stand before the sentence:

"WILL YOU SHOW THE NUMBER THAT REPRESENTS YOUR NAME?"

RED LIGHT.	GREEN LIGHT.
O.	
O, O, O, O, O.	
O, O, O, O, O, O, O.	
	O, O.

Here the number expressed is 1572, and per the same Code, stands for

"WHERE ARE YOU BOUND?"

RED LIGHT.	GREEN LIGHT.
O.	
O, O, O, O, O, C, O, O, O.	
	O, O.
	O, O, O, O, O, O, O, O, O.

The number thus expressed is 1928, and per said Code is

"WHAT IS YOUR CARGO?"

RED LIGHT.	GREEN LIGHT.
O, O, O, O, O.	
	O, O, O, O, O, O.
	O.
O, O, O.	

Here the number expressed is 5603, and stands for

"HAVE YOU ANY NEWS?"

(RED LIGHT.)

Fig. 2

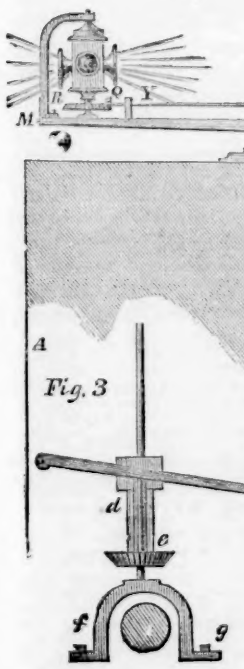

Fig. 3

(GREEN LIGHT)

Fig. 1

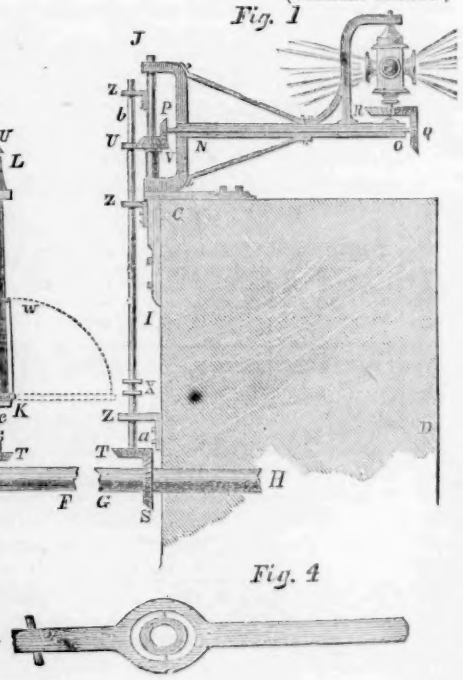

Fig. 4

MECHANICAL CONSTRUCTION.

In our engravings, Figs. 1 and 2, represent Vertical Sections through the wheel-house. In them E F and G H represent portions of the main Shaft. In Fig. 1, I J is a stout Iron or Wooden post, fastened against the side of the wheel-house, directly over the main shaft. On the upper part of this post, is fitted the moveable arm or crane N O, to the main shaft is fitted the bevel wheel S, and to the lower end of the rod a b, is fitted a corresponding wheel T. U is a small pinion on a b, which gears with the spur wheel, V, which in turns gives motion to the wheels, P and Q, and so revolves the lamp R. It will be seen that a Rotary motion is given to the lamp, when the main shaft is in motion and a b connected.

It can be disconnected by a lever, acting between the bosses X, which will elevate the rod in the guides Z Z Z.

Fig. 2 is another arrangement, for the same purpose. In this, K L, represent a hollow Shaft, on which is firmly fastened, the arm L M, on which is the lantern. The hollow post is secured to the wheel-house by the straps K and B, and it can turn freely in them, the other part being the same in them as in fig. 1

The lever K W, when drawn down, will turn the frame in any required position around the Shaft c U. In fig. 1, the arm or crane N O, may be operated by cords from the wheel-house, but in this device, the rod c U, does not lift up as in fig. 1, but in its place, the lower end is made square, and on it slides the short tube, d E, shown in fig. 3. The lower end of the rod turns on a bridge, f g, spanning the main shaft. On the upper end of the tube, d e, a lever is attached by means of boxes and collars as shown in fig. 4. This lever when raised carries with it the beveled wheel T, thus disconnecting the gearing apparatus.

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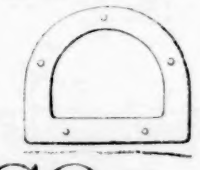

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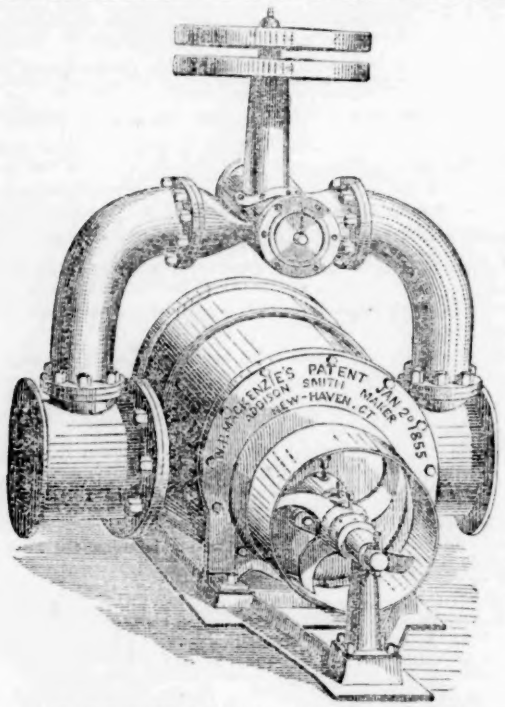

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